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145.25 Mc. Intra-state hook-ups taken on
7135 Kc. Individual frequency check-
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7085 Kc.

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Kc. and 3672 Kc. Intra-state hook-ups
taken on 7115 Kc.

EDITORIAL



No Annual Easter Convention

The Wireless Institute of Australia
will not hold its Federal Convention
this year! The reason being that the
Federal Council voted against it by
five votes to two on a motion sub-
mitted to it by the VK2 Division—
the largest Division in the Institute.

It's reason? Mainly Finance!

Now no one will deny that the
cost of running a Convention amounts
to quite a large sum of money by
the time air fares, accommodation
and meals, and administrative print-
ing costs have been met. But that
the decision not to hold a Convention
is a wise one is wide open to
speculation.

Let us first consider why our Con-
stitution provides for a Convention.
The primary reason is to enable the
Federal Council to meet together to
discuss and, if possible, reach agree-
ment on resolutions designed to
augment all matters pertaining to
the conduct of the Amateur Service
in the Commonwealth of Australia.

Any member of the Federal Council,
past or present, who has attend-
ed a Convention will agree, without
equivocation, that to attempt to
arrive at the same conclusions by
means of correspondence would not
only be a laborious procedure but
would ultimately get nowhere. It
would be like trying to solve the
intricate problems of a judicial court
case without anyone appearing in
court or without the jury meeting
to resolve the evidence placed before
it.

The ex officio office of the Federal
Council is the Federal Executive,
but it must be ignored in regard to
Conventions because it can only
carry out the decisions of the Federal
Council and has no power to convene
a Convention under any other cir-
cumstances than by the approval of
the Federal Council.

The Federal Council consists of a
member representative from each
Division of our Institute who, inter
alia, casts his vote on behalf of the
members of his Division. His Div-

ision's decision is, in turn, imple-
mented by the Divisional Council
after a majority vote of the voting
members of a Division has been
taken.

That the Federal Council voted
against holding an annual Conven-
tion is indicative that the majority
of members in five Divisions did not
desire that its Institute's Federal
Council meet to discuss and resolve
their problems. Is this indeed so?

If you, as a member, had no say
in this matter, then it is high time
you saw to it that your Divisional
Council carried out the constitutional
principles of the majority of mem-
bers in your Division. If you are
satisfied that your Council carried
out your wishes in voting against the
holding of a Convention to discuss
and resolve your problems, then
there is no argument. There should
only be a Convention when you, the
member, say there should be one,
and if you didn't want one then you
as a member are either disinterested
or satisfied. Which is it?

Due to no lack of effort your battle
has been fought in Geneva at the
recent International Telecommunica-
tions Conference. By reason of that
effort you have lost far less than
might have been the case. If Amateur
Radio is to continue to exist
in the world of communications, then
its representative bodies must con-
tinue to function on behalf of its
countries licensed transmitting Amate-
urs. As far as the W.I.A. is con-
cerned this can only be successful if
the Federal Council can function
under its constitution as it is meant
to do. You, as a member, must see
to it that your Division of the In-
stitute represents your wants in the
manner you want them represented.
Constitutionally, you have one course
—to represent your requirements to
the Federal Council through your
Divisional Council. If this won't
work, then you have no alternative
than to change your Constitutional
set-up.

FEDERAL EXECUTIVE

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SYNCHRONOUS COMMUNICATION

PART ONE

M. R. HASKARD,* VK5ZBHI

SUMMARY

During the last few years there has been considerable interest in s.s.b., because of its advantages over a.m.

In this paper it is shown that a simpler system can be used, namely synchronous communication. It has the same advantages as s.s.b., but in certain cases a synchronous communication system is superior to a s.s.b. system. The paper is in three main sections:

- (i) Introduction. Generation and reception of a d.s.b.s.c. signal.
- (ii) Comparison between an a.m., s.s.b., and d.s.b.s.c. system.
- (iii) Practical hints on designing and constructing a d.s.b.s.c. system.

(i) INTRODUCTION

For many years now communication systems have been using a.m., but during the last few years there has been considerable interest in s.s.b. It is certainly true that s.s.b. has many advantages over a.m., but this does not mean that s.s.b. is the ideal system. In this article an endeavour is made to show that, in many ways, a d.s.b.s.c. system is as efficient as, and in some respects superior to, s.s.b.

Let us modulate a carrier $c(t) = c \sin \omega t$ with a signal $M(t)$ [where the highest frequency in $M(t)$ is at least less than half the carrier frequency] using, in turn, the three main types of amplitude modulation, namely a.m., s.s.b. and d.s.b.s.c. On studying the resultant waveforms and the frequency spectrums (Fig. 1) we find that:

- (1) The envelope of the a.m. and d.s.b.s.c. waves are identical with the modulating signal $M(t)$.
- (2) The frequency spectrum of the a.m. wave can be split up into three parts, namely
 - (a) a carrier,
 - (b) a lower sideband, and
 - (c) an upper sideband.

For the d.s.b.s.c. signal we have only the two sidebands, and with the s.s.b. signal just one sideband, either upper or lower. These are illustrated in Fig. 1.

If we look closer at d.s.b.s.c. and s.s.b. signals in which $M(t) = \sin pt$, viz., we now have sinusoidal modulation, we find that our d.s.b.s.c. signal consists of two frequencies $\omega \pm p$, where " ω " is the carrier frequency and " p " the modulating frequency. These two frequencies ($\omega \pm p$ cycles per second) beat together to give a resultant waveform as in Fig. 2. From this beat pattern it can be seen that every time the envelope passes through zero there is a 180° phase shift.

With the s.s.b. signal we have only one output frequency, either $\omega + p$ or $\omega - p$ cycles/sec. If now we modulate a s.s.b. transmitter with a two-tone signal $M(t) = \sin p_1 t + \sin p_2 t$ we obtain two output frequencies ($\omega + p_1$ or $\omega + p_2$ or $\omega - p_1$ and $\omega - p_2$ cycles/sec.) and again these combine to give a beat pattern.

The examination of an a.m. system shows that the system fails badly for two main reasons. They are—

- (a) A carrier, which contains no information is transmitted;
- (b) Linear detection is normally employed, and this is an inefficient detector.

In a d.s.b.s.c. or s.s.b. system the carrier is not transmitted and consequently our transmitted power is reduced and our efficiency is increased. These systems employ more efficient types of detectors, namely, square law or synchronous types.

However, in receiving s.s.b. the main difficulty is to lock the receiver local oscillator and the incoming signal together in frequency. If drift occurs the information desired from the signal becomes "unreadable". With d.s.b.s.c., using a synchronous detector, the local oscillator and signal are phase locked and maximum undistorted output is obtained. By using this phase locking system we can make the receiver follow a signal no matter whether the signal is shifting in frequency, or the

receiver local oscillator is drifting, or both of these are occurring at the same time.

The Synchronous Communication System

In examining a system let us first determine how such a d.s.b.s.c. signal is generated.

(i) The Transmitter

As any balanced modulator will produce a d.s.b.s.c. signal, it is comparatively simple to make a transmitter. The simplest method is by using two tubes in the final amplifier and screen modulating them. To cancel the carrier we can have one of two configurations:

- (a) A push-pull grid circuit and a parallel plate output circuit, or
- (b) A parallel grid input and a push-pull output circuit.

These two circuits are shown in Figs. 3 and 4 respectively.

The d.c. potential, applied to the screen grids, is such that for no audio signal, the two tubes are just cut off. For small transmitters (peak powers

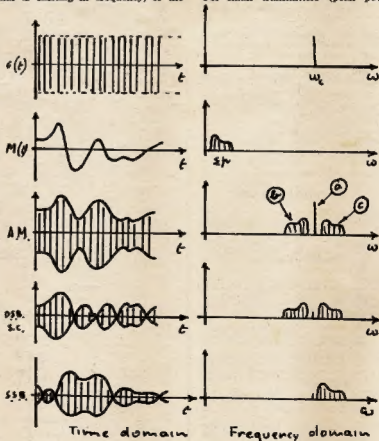


Fig. 1.

* 2 Te Anau Ave., Prospect, South Aus.

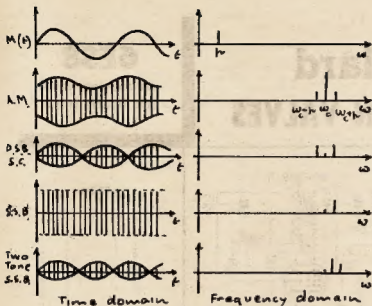


Fig. 2.

up to approximately 100 watts) zero bias is quite sufficient, but for larger powers, a negative bias may have to be supplied, to ensure that the tube is cut off, its ratings are not exceeded, and that a clean cross-over occurs when one tube takes over from the other.

If we now apply an audio signal, one tube will conduct while the other is cut off. Further, as in Class B operation, on the next half of the modulating signal's cycle, the valves change over operating conditions. If, however, for no audio signal both tubes are conducting slightly, then on applying modulation, distortion will occur until one valve is cut off completely. Thus

List of Symbols

- a.g.c. = automatic gain control.
- a.m. = amplitude modulation.
- c(t) = carrier function.
- c.w. = continuous wave.
- d = the percentage increase in bandwidth.
- delta = small error in phase between the incoming signal and the local oscillator.
- d.s.b.s.c. = double sideband suppressed carrier.
- E_s = screen grid potential.
- f.m. = frequency modulation.
- L = local oscillator signal's peak amplitude.
- M(t) = modulating function.
- n = class C efficiency.
- N = average noise power.
- p = modulating signals frequency.
- p.m. = phase modulation.
- P_{in} = radio frequency signal power into the detector stage.
- S/N = signal-to-noise ratio.
- S_m = carrier peak amplitude.
- s.s.b. = single sideband.
- (1/T) = the attenuation factor of the signal power during transmission.
- w = carrier frequency.

we have each valve alternatively conducting, their outputs being 180° out of phase. Because of this operation and the fact that for no modulation both tubes are cut off, we can obtain good carrier suppression. Again because one valve is on while the other is off, the circuit is self-neutralising, the cut-off valve's capacity being the neutralising condenser.

This balanced modulator can be made the final of a transmitter, as it can be a high power modulator. It is designed as a normal Class C final with a voltage E_s on the screen grids. The plate voltage must never swing below E_s or else distortion occurs. When we modulate the valves, the peak voltage we can apply to the screen grids is E_s, then all a modulator has to do is to supply a signal which has a peak voltage E_s. On large tetrodes it is usual to have the screen grids at a relatively low potential (E_s) when compared to the plate voltage and therefore our plate voltage swing, hence efficiency, will not be reduced by much. Our modulator has only to supply a small voltage swing and hence only a few watts of

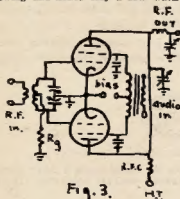


Fig. 3.

power, compared with an a.m. transmitter modulator, which must deliver half as much audio power as there is r.f. power, for 100% modulation.

The efficiency of the screen grid modulated final can be shown simply to be $\pi/4$. This is compatible to an a.m. transmitter, for $\pi/4$ is the maximum efficiency of a Class B modulator and π is the efficiency of the Class C final.

If, instead of using this type of balanced modulator, we use a low level diode type or something similar, we would need high power linear amplifiers (as required for s.s.b.). These can be very tricky to operate.

The remainder of the transmitter is the same as any normal a.m. transmitter.

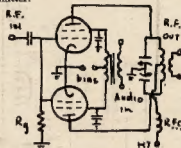


Fig. 4.

(2) The Receiver

A simple basic synchronous receiver is shown in Fig. 5. It can be considered as a superheterodyne receiver with a zero intermediate frequency, the low pass filter giving our required selectivity. The detector stage is either a product or square law detector. The latter however gives rise to additional noise and greater distortion (additional terms produced when squaring). For this reason a product detector is generally used. This simple receiver suffers from two faults. Firstly, heterodyne whistles occur. As we tune in a signal we may obtain bad heterodyne whistles, which can become very disturbing to an operator.

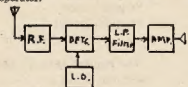


Fig. 5

Secondly, the phase relationship between our local oscillator and the input signal is very important. If both are in phase we obtain maximum output of signal, but when they are 90° out of phase then we have zero output. To overcome this we employ two such receivers, as in Fig. 6. The local oscillator feeds directly into the I detector and into the Q detector through a 90° phase shift network.

We see now that, if the input signal and local oscillator are in phase, then in the I channel we have maximum

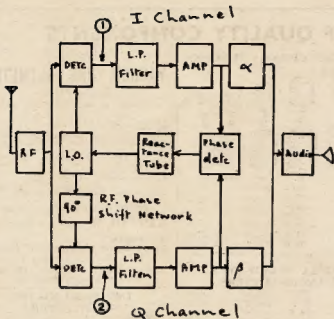


Fig. 6.

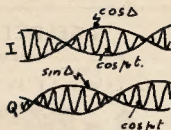


Fig. 8.

Not only is the synchronous receiver a more efficient means of detecting a signal, but it has several other advantages. Since the local oscillator and signals are at the same frequency, we have no image worries. In small transceivers working on one given frequency, we can employ the one oscillator for both transmitter and receiver, thus reducing the number of components, the size of the transceiver, and power drain. There can be an even greater saving in a narrow band f.m. system. The synchronous receiver can receive narrow band f.m., the I channel becoming the Q channel and the Q channel the I (because of the 90° phase shifts between the carrier and sidebands in a f.m. signal). The reactance tube, then, can not only be used in the servo-loop, but also used to modulate the local oscillator for the transmitter.

output and zero output in the Q channel, i.e. the receiver is correctly tuned. If there is a difference in phase (= delta) between our local oscillator and signal, then the output on the I channel falls off at a rate equal to $\cos(\delta)$ while the signal in the Q channel increases at a $\sin(\delta)$ rate, namely the output from the I channel does not vary much, but the output from the Q channel increases rapidly. These two signals are amplified and compared in the phase detector and the output is fed to a reactance tube. The reactance tube changes the frequency of the local oscillator until the signal in the Q channel is reduced to zero, i.e. the local oscillator is locked in correctly in phase and frequency.

Let us now open the servo loop and examine the principle of the receiver more closely. If our input signal is simply a carrier whose frequency differs slightly from that of the local oscillator of the receiver, then from both I and Q channels we obtain a single audio tone whose frequency is the difference of the frequencies of the incoming carrier and local oscillator.

Because of the 90° radio frequency phase shift, these two audio signals at (1) and (2) in Fig. 8 are 90° out of phase. If then, these outputs are connected to the X and Y plates of an oscilloscope, the resultant pattern displayed is a circle as in Fig. 7. The direction of rotation of the circle changes if the incoming signal's frequency is changed from below the local oscillator frequency to the above.

Now let us receive a d.s.b.s.c. signal. If the receiver is tuned correctly in frequency, then the output from the I channel is

$$I = SL \cos(\delta) \cos pt$$

$$Q = SL \sin(\delta) \cos pt$$

We have two signals whose amplitudes are dependent on delta, the phase difference between the input signal and the local oscillator. Should there be a change in frequency, viz. delta is changing linearly with time, then the I and Q channel signals are as in Fig. 8. The two envelopes are 90° out of phase and by displaying points (1) and (2) (Fig. 6) on the oscilloscope as before, the resultant pattern is as in Fig. 9. When delta is constant, the pattern simplifies to a straight line inclined to the vertical (or horizontal) axis at an angle delta. Consequently when the signal is correctly locked on, delta is zero and our pattern is a vertical (or horizontal) line. (Fig. 10).

It may be mentioned here that the alpha and beta networks added in Fig. 6 will be discussed later. They form a 90° phase shift network to suppress noise from one or the other sidebands.

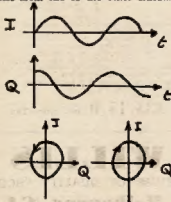


Fig. 7

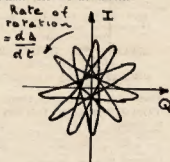


Fig. 9.

Having our selectivity determined by a low pass filter is an advantage. (The overall bandwidth of the receiver is the low pass filter response mirrored about the carrier frequency.) With modern filters we can obtain a high rate of increase of attenuation near the filter's

(Continued on Page 11)

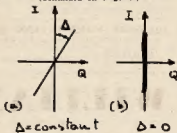


Fig. 10.

Page 6

Three-Band Crystal Controlled Converter

An Easy Way of Extending the High Frequency Coverage of Most Disposals Receivers

R. S. GURR,* VK9RO

A NUMBER of readily available disposals receivers have a top frequency limit of approximately 18 Mc. or so, and so the thought often comes to the mind of the owner to modify one of the ranges to cover at least the missing 21 Mc. and 28 Mc. bands. This method has proved satisfactory for some, but others have little success and often finish up ruining a perfectly good receiver and lowering its re-sale value.

Once converted, the job of recalibration of a professionally finished dial is also a difficult venture.

The converter described has enabled the writer to obtain four features not ordinarily available in a receiver tuning to even 30 Mc:—

- (1) Better front-end design on 28 and 21 Mc. bands.
- (2) Improved bandspread.
- (3) Improved stability due to use of lower frequency range oscillator in the main receiver.
- (4) No modifications needed to main receiver.

oscillator frequency is arbitrary and an infinite number of oscillator/intermediate-frequency combinations are available to suit, depending mainly on the receiver range and crystals on hand. The choice of 18 Mc. was due to a 9 Mc. crystal being on hand. The 8 Mc. crystal from a Command doubles to 16 Mc. to make a good start for those possessing one.

The use of 18 Mc. allows the following i.f. ranges on the respective bands:

- (1) 14.000 — 14.350 Mc.
If: 4.0 — 3.85 Mc.
(2) 21.000 — 21.450 Mc.
If: 3.0 — 3.45 Mc.
(3) 28.000 — 30.000 Mc.
If: 10.0 — 12.0 Mc.

Thus using any receiver tuning 3-12 Mc. one is able to tune the five bands. The idea has been worked well ahead of each of the following: AR7, BC342, BC312, R107, AR8, Eddystone 680X, H.R.O., dual wave receivers, etc. In the case of the 680X, it performs well also as a two-stage preamplifier on the top range 12-30 Mc.

tried. These three tubes in combination may be tested simply by using it as a two-stage preamplifier for a receiver tuning the 13 to 30 Mc. range.

The oscillator plate circuit tuning is variable from approximately 15 to 30 Mc., so that should other crystals be used, the correct multiple can be tuned simply by rotating the 100 pF. condenser at the side. The tuning of the plate does not stop the crystal oscillating as in this modified Pierce circuit the crystal oscillates immediately screen volts are applied. The correct tuning can be found by listening in a second receiver or by grid dip oscillator. The mixer and oscillator coils are mounted together in one can, and this is the only coupling necessary. In the earlier model, the oscillator coil was separated from the mixer and coupling was via a 5 pF. condenser from the plate to mixer grid. In this set-up the

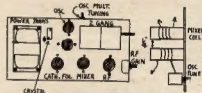


Fig. 2.—Layout of chassis.

mixer tuning was broad and greater mixer selectivity was gained by the inductive coupling now used.

A great deal of experimenting can go into the input coupling circuits of any r.f. stage and even now it is variable, depending on the antenna in use. Some serials do not load the stage enough to stop the r.f. taking off, but as the three-turn aerial primary can slide up and down, the stage can be readily loaded if desired.

The variable input coupling is handy to reduce cross-modulation effects in thickly populated Ham areas as the little reduction of r.f. gain can usually be made up in the following receiver.

No detailed construction is given as every Ham has his own way of laying things out, but the article is presented for any who may wish to use the same principles for extending their receiver ranges without attacking the receiver.

A further converter using a 6450 Kc. crystal and a 10 Mc. mixer, range of 5-15 Mc. produces an intermediate frequency of 550 to 700 Kc. on 7 Mc. and 1100 to 1450 Kc. on 14 Mc. (when second harmonic of crystal used). The thought of a two-to-one frequency coverage on the 13 to 30 Mc. range has never worried the writer, who has never yet worked from a location where the signal-to-noise ratio was not already determined by electrical and audio equipment before he hit the receiver. The three-to-one coverage of the lower frequency converter is also of no consequence for the same reason but include static as the main noise factor.

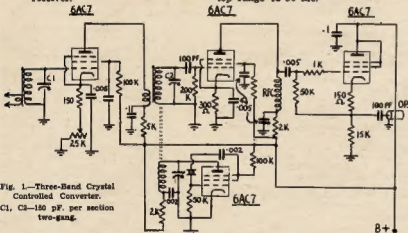


Fig. 1.—Three-Band Crystal Controlled Converter.

C1, C2—150 pF. per section
two-gang.

The unit has been loaned from shack to shack in both VK5 and VK9, and the idea has been received with pleasure by all who have used it. Its cost is very small, employing 8AC7s throughout and "junk-box" components, but mounted as it is, on a stripped Command receiver chassis with new front panel and chassis top, it fits in very neatly into even the "flash" Ham shacks.

The idea of crystal converters has been popular for years among v.h.f. equipment, but although high frequency converters have been of interest for ten years or more now, I have not observed many in my travels. On high frequency one major advantage is the ability to copy 14 Mc. single sideband with the stability of a 2 or 3 Mc. single sideband signal.

The crystal controlled oscillator produces a signal of 18 Mc. in my converter, but the choice of the actual

CONSTRUCTION

The unit is set out on the chassis as shown in Fig. 2.

The construction is simple. 6AC7s have been used throughout, wired in series parallel for a 12 volt filament system as the converter power supply also feeds a 3-6 Mc. Command receiver which is used as an intermediate frequency for transmitter monitoring.

The r.f. and mixer are tuned by a two-gang condenser and the coils are tracked to give a 13 to 30 Mc. tuning range. There are trimmers fitted to the gang and slugs in the coils. Coils are shielded by a plate which cuts across the middle of the r.f. tube socket and the circuitry values are taken from A.R.R.L. for the r.f. and mixer components.

The cathode follower circuit was first sighted in an article by VK3AX on preamplifiers in "Amateur Radio." It works as well as any others I have

Some Considerations in the Selection of an Antenna Tower

EDWARD A. STANLEY, W4QDZ

• This article doesn't tell you how to design a tower, but it does discuss some of the things you should look for if you're in the market for a support for your beam.

of loads, but it is the opinion of the author that a little knowledge will be more helpful than dangerous and will materially assist the prospective ham-tower user in his selection of a proper structure.

DETERMINATION OF STRUCTURAL CAPACITY

Since our main concern is to know whether or not a given tower will stay up with the beam and rotator we place on it, we should consider the forces which act upon the tower. They are:

Wind pressure.
Static weight.
Torsion.

Of course there are other factors, but from the standpoint of the Amateur user, these will be the most important to consider. Most Amateurs do not even begin to realize the tremendous forces which build up within a tower structure when winds begin to work on it. We may well take the time to consider some of these effects in order to approach a basic understanding of the essential ingredients of a workable tower structure. Let us first take up the problem of pressure as applied by a wind. The formula for pressure is:

$$P = 0.0032V^2$$

where P is the pressure in pounds per square foot,

and V is the velocity of the wind in miles per hour.

Therefore,

$$V = \sqrt{P \div 0.0032}$$

Example: Given a tower rated as a "50-pound" tower. Determine the velocity of wind for which this tower is rated.

$$V = \sqrt{50 \div 0.0032} \\ = 125 \text{ miles per hour.}$$

One important thing to remember is that we are working against squared velocities and therefore a wind of 100 miles per hour will exert four times as much pressure as a wind of 50 miles per hour.

A few simple computations will illustrate the order of the strain which a tower must withstand under high wind velocities. The formula for obtaining the surface areas when calculating the pressure per square foot exposed to the wind is as follows for tubular members:

$$A = 0.866LD \div 144$$

where A is the area in square feet,

L is the length of the member in inches,

D is the width of the member in inches (in this case the outside diameter of the tubing).

The correction factor of 0.866 is applied to tubular surfaces. Where flat surfaces are involved, this factor should not be applied.

Example: Given a beam with the following dimensions:

Boom—2 inches o.d., 16 feet long.

Element No. 1—1 inch o.d., 33 feet long.

Element No. 2—1 inch o.d., 32 feet long.

Element No. 3—1 inch o.d., 31 feet long.

Determine the maximum surface area which will be exposed to the wind.

$$\text{Since } A = 0.866LD \div 144$$

then A (El. 1) = 1.831 square feet

A (El. 2) = 1.776 square feet

A (El. 3) = 1.720 square feet

for a total of 5.33 square feet.

Since it is obvious that the elements of the array will present the greater face to the wind, the area of the boom need not be calculated in this case.

Now, let us see how much windload would be developed by this array if it were mounted atop a tower, say, 40 feet in height, and placed in a wind of 100 miles per hour velocity. Using $P = 0.0032V^2$, we find that the pressure in pounds per square foot at this velocity is 32. Multiplying this by the area, 5.33, we find that the total pressure will be 170.56 pounds. To go further, multiply this figure by 40 (the height of the tower), and we find that there is transmitted, due to wind pressure on the antenna alone, a force of over 6,800 foot pounds which will result in that much compression on one leg of the tower, or that much tension on the other two legs, assuming it is a triangular structure. Already, it does not take long for a Ham with a curious disposition to begin to envision the terrific forces which begin to develop in his tower when the winds start tugging at it and its associated equipment.

COMPUTATIONS FOR A HYPOTHETICAL TOWER

Suppose, just for the purposes of practice, we set up a hypothetical tower and try to get a rough idea of what happens to it when subjected to the above beam, a rotator, mast and wind. We will select a wind velocity of 85 miles per hour, since this is a figure often used in the description of a tower. Let us use material with a rather heavy gauge wall in this hypothetical tower, retaining an outside diameter of 1 1/2 inches for the legs and braces, and keeping the wall thickness at 10 gauge rather than 16 or 14. Our tower would be specified like this:

IN recent years, the trend away from long wire antennae and toward the rotating type of directional radiator has been phenomenal. So also has been the general migration of dwellers from the noise and turmoil of the cities to the peace and quiet of newly developed suburban areas. Many of these areas have been planned from the moment of their conception for the ultimate in "gracious" living. To assure that the level of standards set initially will be maintained, duly appointed and legally equipped planning and zoning boards have been established with power to decide, among other things, what sizes and types of structures will be permitted, from the consideration of not only safety but appearance as well. As a result, it is becoming more the rule than the exception that a permit must be secured before the Amateur may install a tower to support his beam.

Working hand and glove with the planning and licensing committees are engineering consultants, and quite often the Ham who wants to erect a tower will be called upon to furnish engineering data in addition to sketches or pictures of the proposed installation.

Many factors bear strongly on the selection of the right tower to do the job at hand. Towers may be resolved into three general classifications:

Self-supporting towers (free-standing).

Guyed towers.

Mechanically actuated towers, guyed and self-supporting.

STRUCTURAL CONSIDERATIONS

Primarily, the tower must be able to support the static weight of its own structure, and that of the antenna, mast and rotator. Also, it must support incidental ice, sleet and snow which may form radially about its members. In addition to the foregoing, it must be sufficiently strong to support all of the static weight plus the pressures placed upon its surface areas by winds which will be encountered, all taking into consideration the height at which the Ham desires to place his beam. Thus, we see, the prospective ham-tower erector has a multitude of things to consider before he makes a sizable investment in this new piece of highly important equipment for his station. He will begin to run into new terms such as "windload," "L/r," "maximum compression," and "moment." He will peruse specifications which will describe towers in terms of "so many pounds" or "so many miles per hour." This is bound to be confusing to him, and it is well to go into some of these things in order to assist him in evaluating the actual tower he will need. It is far from the intention of this article to go into complex analysis and integration

Reprinted from "QST," December, 1959.

Legs—To be of $1\frac{1}{2}$ inch o.d. steel tube, with 10 ga. (0.134 inch) wall.

Braces—Same as legs.

Windload—23.12 pounds per square foot (85 m.p.h.).

Structure—Triangular, 40 feet tall, 12 inch spacing between legs, braces located on 12 inch centres, totalling 40 in all. Tower to be free standing and topped with beam, rotator and mast with a total of 6 square feet of exposed area and a static weight of 100 pounds. Static weight of the tower is 400 pounds.

To compute: The area of the tower exposed to the wind.

Using the basis formula for determining the surface area of tubular members, we compute the area of one face, 2 legs $\times 1\frac{1}{2}$ inches o.d. $\times 480$ inches height = 1,200 square inches. 40 braces $\times 1\frac{1}{2}$ inches o.d. $\times 12$ inches length = 600 square inches for a total of 1,800 square inches, or 12.5 square feet. Apply the correction factor for tubular members, $12.5 \times 0.686 = 8.58$ square feet.

led A, B, C and D from the top to the ground. Keeping in mind that we are computing force at a wind velocity of 85 miles per hour blowing against the exposed faces of the tower and the beam, mast and rotator, let us total up the number of foot-pounds which are being transmitted down to the base of the tower:

At the top of the tower:
6 sq. ft. $\times 23.12$ lbs. $\times 40$ ft.
= 5548 ft. lbs.

At the mid-point of Section A:
7.2 lbs. $\times 10$ ft. $\times 35$ ft.
= 2520 ft. lbs.

At the mid-point of Section B:
7.2 lbs. $\times 10$ ft. $\times 25$ ft.
= 1800 ft. lbs.

At the mid-point of Section C:
7.2 lbs. $\times 10$ ft. $\times 15$ ft.
= 1080 ft. lbs.

At the mid-point of Section D:
7.2 lbs. $\times 10$ ft. $\times 5$ ft.
= 360 ft. lbs.

Static weight of beam and tower
= 500 ft. lbs.

Total transmitted force
= 11,898 ft. lbs.

This means that there is a force of roughly 12,900 ft. lbs. or six tons being

engineering we have overloaded our tower 50 per cent.

It will be noticed that the support of the steel provided by the braces has not been considered in this computation. We have made our computations on the basis of the worst situation in this regard. Standard TR116 has been adopted in the public interest and is designed to eliminate misunderstandings between the manufacturer and the purchaser, and to assist the purchaser in selecting and obtaining without delay the proper product for his needs. This standard sets forth the basic requirements for radio transmitting towers and tower for radio transmitting antennae. Copies may be obtained from E.I.A., 777 14th St. N.W., Washington 5, D.C., for 25 cents each. Incidentally, the above referenced standard makes no note of any material other than steel.

TORSIONAL STABILITY

One thing which should always be considered in any tower topped with a rotating-beam antenna is the torsional stability, or ability to resist twisting. A directional array during its rotation, builds up a considerable amount of kinetic energy. When rotation is stopped suddenly this energy is transmitted directly to the tower and tends to twist the section. It has been observed that the starting and stopping of a rotary beam quite often places more torsion on a tower than it might receive during a 100 miles per hour wind. To withstand this frequent impact of forces, it is necessary that diagonal bracing be employed. The proper tower for a large beam equipped with a positively locking rotor brake must be well designed in order to take these forces.

SPECIAL TYPES

From the standpoint of appearance, a self-supporting unit with a small base area is usually considered best. Unightly bulk is avoided and also the need for guy wires and a large base area. A special type of self-supporting tower is the type that can be cranked up and down and tilted over. Towers of this type have many advantages. They are easy to erect. The antenna can be mounted from the ground, eliminating the dangers involved in climbing. They can be easily lowered during exceptionally strong winds when heavy icing occurs which might damage the antenna. However, the installation of these towers does require some special consideration. Positive locking devices are essential. There must be provision to prevent the tower from telescoping should a cable fail, and also to remove the weight of the telescoping sections from the cable when the tower is extended. Winches should have removable handles so that the tower may be left untended with no danger to children or unthinking adults who may be tempted to tamper with the mechanism.

There has been considerable discussion about the feasibility of using a ground post for mounting tilt-over towers. The author has had considerable experience with one such mounting. This post is mounted in Florida sand and supports a 40-foot tower topped with a full-sized tri-band beam,

(Continued on Page 18)

$$6 \text{ sq ft} \times 23.12 \text{ lbs./ft.}^2 \times 40 \text{ ft.} =$$

$$7.2 \text{ lbs./ft.} \times 10 \text{ ft.} \times 35 \text{ ft.} =$$

$$7.2 \text{ lbs./ft.} \times 10 \text{ ft.} \times 25 \text{ ft.} =$$

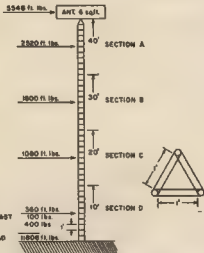
$$7.2 \text{ lbs./ft.} \times 10 \text{ ft.} \times 15 \text{ ft.} =$$

$$7.2 \text{ lbs./ft.} \times 10 \text{ ft.} \times 5 \text{ ft.} =$$

$$\text{STATIC WL OF BEAM, ROTOR \& MAST}$$

$$\text{STATIC WL OF TOWER}$$

$$\text{TOTAL WIND FORCE \& STATIC LOAD}$$



transmitted to the base of the tower. It means that one leg may be put under a compression of 12,000 lbs., while the other two legs are under a tension of 6,000 lbs. each.

According to the official yardstick of the tower industry, E.I.A. Standard TR116, this is much in excess of the proper permissible compression considering the amount of steel available to do the job. The $1\frac{1}{2}$ inch o.d. tubing with the 10 gauge wall which we used has a cross-sectional area of steel of approximately 0.470 square inch. It is upon this cross-sectional area that we place a lot of our dependence when designing a steel tower. According to the standard, one square inch of steel of a certain grade and under certain conditions, will be permitted a maximum compression load of 17,000 lbs. Using this as a figure, our 0.470 square inch will only handle approximately 8,000 pounds of allowable compression. This means that according to good



Fig. 1. Sketch showing loading on a 40 ft. triangular tower at a wind velocity of 85 m.p.h.

Since the tower is triangular, we apply a corrector of 1.5 to the above figure, making the total again 12.5 square feet. The area of the exposed face of the tower is 12.5 square feet and the pressure per square foot is 23.12 pounds at a velocity of 85 miles per hour. If we take the product of the two (12.5×23.12) and divide by the length of the tower in feet, we find that the tower has a windload of 7.2 pounds per lineal foot.

We now have the necessary figures to determine roughly what happens to our tower at the stated wind velocity. Refer to Fig. 1, which shows the general layout of the structure. To keep things simple, we will take a little license in our computations and make them on the basis of ten-foot increments, applying the wind force against the centre of each increment. The block at the top of the tower represents the combined areas of antenna, rotator and mast. The tower sections are label-

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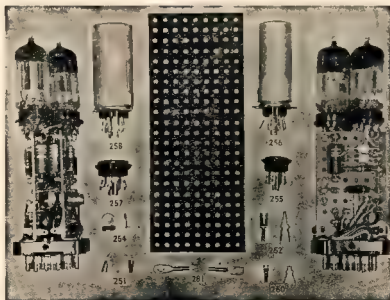
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A VOLTAGE TUNED B.F.O.

ALAN ELLIOTT,* VK3AEL

Synchronous Communication

(Continued from Page 5)

Some time ago it became necessary to install a beat frequency oscillator in a receiver in such a position on the chassis that it was not readily possible to bring out a control shaft for the variable condenser to the front panel. The easy way out was taken—that of leaving the b.f.o. frequency fixed and altering the c.w. beat note by tuning the receiver, but the lack of a pitch control was felt to be a disadvantage and, in addition, the performance on sideband was unsatisfactory.

Recently, however, a device has become available which appeared to be a solution to the problem—the voltage variable capacitor. The type available locally, called the Semicap 68SC20, made by the International Rectifier Corporation in California, is a silicon diode which undergoes a change of capacitance when a changing voltage is applied across it. The control or bias voltage is d.c. and may be located at a distance from the capacitor.

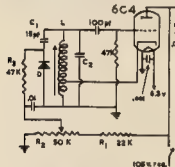


Fig. 1—Voltage Tuned B.F.O.

D—Semicap Type 68SC20.

C3—Padder condenser in coil can.

L—B.f.o. coil.

The data sheets state that the Semicap has a capacitance range of 3 to 30 pF., a frequency range of 1 to 100 megacycles, and a maximum bias plus peak signal voltage rating of 200 volts. According to the graph supplied, the capacity of a typical specimen is approximately 30 pF. at 0.2 volts, 15 pF. at 1.0 volt, 7 pF. at 3.0 volts, and 3 pF. at 100 volts. The Q is given at over 1,000 megohms or more. In addition, the Semicap is stated to be virtually insensitive to changes in temperature.

Except that the intermediate frequency of the receiver was 455 Kc. whereas the lowest frequency rating of the Semicap was 1 megacycle, all this looked so hopeful that one was purchased for trial.

On connecting up the circuit recommended in the data sheet, wherein the bias voltage was applied to the diode via an r.f. choke, trouble in the form of spurious oscillations was immediately apparent. When the choke was replaced with a resistor, the circuit became stable and the capacity of the device began to be realised. As there is a current flow through this series resistor, the voltage drop reduces the

potential applied to the diode, thus setting a limit to the value of the resistor.

Experimenting with the values of the components led to the circuit of Fig. 1. The range of adjustment of the beat note depends on several factors including the values of R1, R2, R3, C1 and C2. By increasing R1 or R3, or by decreasing C1, the range of control is reduced. A logarithmic potentiometer was used for R2. The components R3 and C4 should be located close to the Semicap and the bias voltage should be stabilised. In my case, the existing regulated supply for the local oscillator was used.

The b.f.o. has proved to be stable and smooth in operation.

The ability to control the capacitance of a circuit by a potentiometer, located some distance away, opens up new possibilities in equipment design.

Technical Correspondence

VT127 DATA

Editor "A.R.," Dear Sir,

I was very interested in the article which appeared in the January issue under the heading of "Technical Topics"—Valves.

The writer mentions the VT127 and regrets that no data is available, presumably for AB1 or AB2 operation. I cannot help out in this matter, but, quoting from "Babani," the VT127 is equivalent to the Mazda PEN46 (if that tells you anything) and the CV1127.

Further details: pentode; indirectly heated cathode; 8L volts, 4.0 at 1.75 amp.; designed as a time base power amplifier.

Maximum ratings: E, 315v., E₂ 210v., E₃ —69v., I_a 63 mA., I_b 14 mA., R_i 90 ohms (cath. resistor), gm 8,500 μmho. No output power quoted.

Base: 1, h; 2, k; 3, blank; 4, g; 5, g; 6 and 7, blank; 8, h; top cap. a.

—D. J. REITZ, VK5ZCD.

AWARDS

DIPLOMA 5 DE MAYO

On the 5th May, 1962, in the City of Puebla, Republic of Mexico, Mexican and French troops fought heroically for the possession of that City. This Saga has been known to posterity as the Battle of Puebla.

The Radio Club of Puebla, affiliated to the I.M.R.E.A.C., wishing to honor memory of the valiant soldiers who, with their bravery, added glorious pages to the history of Mexico, has decided to establish the Diploma Cinco De Mayo—5th of May—it being an honor to offer it to any duly authorized Amateur Radio Station that can fulfill the following conditions:

1. Amateurs in Mexico: Contacts with four Amateur Stations in the City of Puebla on two different bands.

2. Amateurs in the American Continent, excepting Mexico: Contacts with two Amateur Stations in the City of Puebla on two different bands.

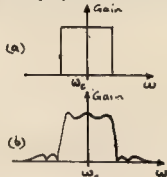
3. Amateurs in Europe, Africa, Asia and Oceania: Contacts with two Amateur Stations in the City of Puebla on any band.

Only the contacts made after the 1st of January, 1960, are valid. They may be on c.w., phone or very low communication.

All QSLs or written proof of two-way contacts with Amateurs in Puebla, Pue., Mexico, must be submitted by the applicant together with one dollar to cover return of QSLs and a certified Airmail Postage of the Diploma to the following address:
I.M.R.E.A.C. Club de Puebla, 2 Poniente 511, Puebla, Pue., Mexico.

cut off frequency, giving us an almost ideal selectivity curve (see Fig. 11). Besides this, by simple filter switching or using an active filter, the selectivity curve of the receiver can easily and quickly be changed.

A product detector is used, allowing very low input signals to be detected. This means that the bulk of the gain of the receiver can be at audio frequencies. This is an ideal set-up for a transistor receiver, as the number of expensive transistors will be small. Even the reactance tube can be replaced by a variable capacity diode.



(a) Ideal frequency response curve
(b) Practical response curve

Fig. 11.

It was mentioned earlier that the synchronous receiver can track signals which are shifting in frequency. The amount of shift a receiver will follow depends upon the bandwidth of the phase loop. The greater its bandwidth, the greater the shift in frequency it can follow.

However, if we make the phase loop bandwidth too wide, then noise will interfere with the tracking. Hence there is a limit to how wide our phase loop bandwidth can be. For a communication receiver, then, a narrow bandwidth is required for two reasons. Firstly, we want the receiver to lock onto and stay locked to the signal in which we are interested, and not jump to a nearby strong signal. Secondly, by using a narrow bandwidth the receiver will stay locked onto a signal even in a high level of noise.

Each time a signal is received the receiver automatically locks onto it. The time to do this must be small, or portion of the incoming signal will be lost.

Another advantage of a synchronous receiver is the number of different types of signal it can receive. If the frequency response curves of the I and Q channels are such that very low frequencies are attenuated heavily, we can then receive a.m., narrow band f.m. and p.m., as well as d.s.b.c. If the servo loop can be broken we can also receive s.s.b. and c.w.

THE SAD STORY OF A MULTI-OP. STATION IN THE NATIONAL FIELD DAY

C. LUCKMAN,* VK3ADL

THIS story is like the one that got away. We should have won our section, but . . . It all began when Charlie VK3AZR and myself were speculating on the number of electrical appliances which could be operated from the 230 volt 50 cycle 2kw. petrol alternator that I had borrowed from a local C.M.F. Regiment. Why not replace the toasters, fans, shavers, juicers, tractors, etc., with Hams and transmitters? Why not rig for each band up to one meter?

The blueprint, after a number of phone calls and arguments, called for two departments. The h.f. department consisted of Charlie VK3AZR and his all-band rig, George VK3WJ and his all-band rig, my 40 and 15 metre rig, plus Max VK3AKT and Kelvin VK3LL. The v.h.f. department comprised Jock VK3ZDG with his 6, 2 and 1 metre rack and receivers, Ian VK3ZBP and his 6 metre rig, and John VK3ZAI. Two tents, serials for each band and a QTH on top of a rare high hill at Donnybrook completed the fundamentals. How could we possibly be beaten?

By 1500 hours on Saturday afternoon, Jock finished soldering plugs, etc., to his 2 cwt. rack and we stacked his gear with mine into my 1932 "B Model" Ford and trailer, and Kelvin's Vauxhall, and rattled off towards Donnybrook. At 1545 hours it started to rain.

The QTH was Woody Hill (now a misnomer), by courtesy of Mr. George White, the owner. This hill is denuded of all live vegetation, consisting mainly of gravel and rocks. The track to the top is very steep and six sweating Hams were needed to get the alternator and accessories on my trailer to the top. It was still raining—heavier. There seemed only two places on the top where the gradient was less than one in fifteen, so these places became tent sites. The v.h.f. men had an Army type tent, about 6 ft. x 8 ft., and the h.f. tent was 14 ft. x 14 ft. with 6 ft. walls. The rain and strong wind—probably up to 30 m.p.h.—made organisation very difficult. There were only two raincoats amongst us—and only one kept the rain out. Everyone was thoroughly wet from the knees down—from the hair down. The two tents were erected, tables built from packing case sides and an old door, and we shifted what we could from cars to tents.

RAIN CAUSED ALTERNATOR'S FAILURE

George was late and missed the track leading up to the top of the hill. A message via c.w. on the Ford's twin horns was later reported to have suffered very bad QSB due to strong wind. The alternator was roped to the trailer and covered with a tarp and packing case sides; it started easily and the electric lights began to burn. We put up a 40 metre dipole and the v.h.f. beams

It was now dark, as well as very wet and windy—then at 7.30 the alternator stopped delivering the juice and we were submerged into darkness and could no longer make hot toast over an upturned radiator. After the appropriate remarks concerning the alternator's ancestry we resorted to science and reason. Due mainly to the persistence of Max, and George's sensitive nose (which smelt, literally, the path of the short circuit), we found a badly corroded 4-pin socket on the rectifying unit. Allah be praised, we had a spare.

During this time, Jock and Ian found John acting as a tent pole, the original having torn through the top of the v.h.f. tent. They evacuated some gear, made the rest as waterproof as possible and allowed the whole tent to collapse.

At 2130 hours we had electric light, hot toast and tea, and the only rig we could reasonably put on the air was Charlie's. Then the dipole went not load. After about half an hour we repaired the co-ax from a state of complete open circuit to a state of intermittent. Now we were on the air and that night we made six contacts on 40 metres. However, of the three v.h.f. receivers, three would not receive. Causes were: one broken speaker lead, one defunct noise limiter, one unknown. The speaker lead was repaired and things brightened slightly. Ian stoked up his 6 metre gear in the car, and managed one contact at 2250 hours. At 2300 the v.h.f. men moved into the h.f. tent and joined us in making relevant observations about the wind (probably reaching 40 m.p.h.) by that time, the rain, and the Federal Contest Committee's choice of the weekend, etc., etc.

At midnight we stopped making hot toast and tea and thought about sleep. I then noticed one of the results of marriage, i.e. all the married Hams either went home to sleep or slept in cars, and therefore were both comfortable and dry.

Around 0600 hours on Sunday I was conscious of being wet around the neck and shoulders. Water had run from the tent wall to the stretcher mattress. At 0615 hours, Jock was apparently the most conscious of the trio sleeping in the tent and he staggered outside to replace the first tent peg to be uprooted by the wind which had strengthened and shifted further to the west. Ten minutes later, while in the course of speculating upon the wisdom of Murphy's law (if anything can possibly go wrong, it will) and its corollary (if it's still going, look out), six tent pegs came out and the tent folded inwards. Fortunately Max and George were on the scene quickly. We put large piles of rocks on each of the tent pegs in an effort to keep them in the ground. This was the first of four times the tent was destined to be blown in. It was still raining.

We looked around us, the v.h.f. tent looked like a large dirty white sheep in the red mud, the v.h.f. beams lay bent and twisted on the rocks, someone said "good morning."

Sunday morning was definitely windier, though the rain stopped around 0900 hours. We put up a long wire for George's ATR2B and a 15 metre dipole. The alternator was chugging very happily and we had some hot toast and tea. However, we had little chance of getting many contacts because the tent was rarely secure for more than 30 minutes, and it took every hand to hold and fasten it. The general estimate of the wind force was exceeding 50 m.p.h. at peak gusts.

Our first Sunday QSO on 40 metres was at 1011 hours. The v.h.f. men man-handled Jock's rack into the h.f. tent and after repairing co-ax and removing fine black dust from the relays, the first v.h.f. contact was made for Sunday at 1030 hours. The v.h.f. beams were continually being swung around by the wind despite the large piles of rocks stacked around the mast. Who was it that drove along Sydney Road, only a mile from us, whose signal lifted the 2 metre receiver from the table, but who ignored our calls?

I began to photograph the desolation with a camera which was later found to have a faulty shutter.

COLLAPSE OF TENT WALLS

At 1135 hours, while someone was calling CQ 2 metres, and toast was being cooked over the upturned radiator, a record number of tent pegs were catapulted towards the heavens and two tent walls enveloped the rig, stove and us. After about five frantic minutes, Jock remembered that the whole unexpurgated fiasco, including tent flapping, wind and unusually violent language, was being broadcast over 2 metres. He crawled under the debris to turn off the rig—fortunately, we had remembered the radiator earlier. The tent was down for 25 minutes this time. Charlie arrived 30 minutes later (he had gone home to sleep), looking very fit and healthy—his health would have been in danger had he not brought hot tea!

About 1400 hours we remembered we had not had any lunch, so we had tea and hot toast adorned with bully beef or cheese. Shortly after, the owner of Woody Hill arrived with some of his family and seemed impressed with what he found. He told us that we caused some interest during Saturday night because he was telephoned by several locals who no doubt wondered who would be crazy enough to spend the night on Woody Hill when there was a severe storm.

On the h.f. bands 40 metres was clearly the best; we made up to six contacts in rapid succession on the one frequency. We were rather surprised by the lack of c.w. on 40 and on a

* 2 Milton Street, Canterbury, Vic.

couple of occasions there were no stations on c.w. at all. We tuned up on 15 metres a couple of times looking for DX but we worked only a ZL. Unfortunately George's ATRAB on 80 metres caused quite bad second harmonic QRM and he was receiving strong sub-harmonics from the 40 metre transmitter. On 6 metres contacts rolled in very quickly. A contact on 2 metres with a station in Geelong was pleasing. The last three hours of the Contest were very encouraging, and at times very fast operating was required to get maximum results. This was the time when the efficient rigs proved their worth.

In about six hours of operating on h.f. and 4½ hours on v.h.f. (sometimes with open feedline), we contacted 93 stations. Despite the foul weather, we enjoyed ourselves and we learnt a lot about N.F.D. organisation.

TECHNICAL PROBLEMS

Part of our plans were technically feasible. We were worried about reducing the power to 25 watts, but this was easily done by using a high wattage resistor across the modulation

the district and no barriers to Geelong, Ballarat or to the north. This type of QTH is not very difficult to find.

H.f. antennae are more of a problem. General agreement after the post mortem is to have two trap antennae. One for 40 and 80, one for 20, 15 and 10 metres. Probably they should be vertical since this eliminates the quite serious problem of finding a hill with a clear take off, but having tall trees 66 ft. and 132 ft. apart. (Has anyone ever found tall trees the right distance apart?)

We were probably too ambitious with the amount of gear we carried, although had the weather been more reasonable we would have used more of the gear.

The alternator was a complete success, apart from the short across the 4-pin socket (due no doubt to the thing being quite wet) and the small petrol tank capacity. The governor on the engine was poor, and the belt drive combined to give a continuous voltage fluctuation of about 7 volts, but this had no effect on our gear. It is worth remembering that alternators are a lot easier to get than most people think,

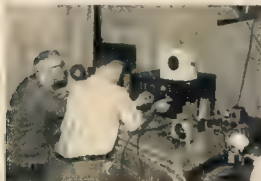
e.g. Jock uses a synchronous motor as an alternator, driven by a small motor mower engine, with excellent results.

IMPORTANT POINTERS

Here are a few points we think are important about Field Days: Your gear, particularly co-ax, that works at home does not necessarily work in the field; a close survey of the site is desirable to check trees, tracks and hazards; a caravan or a furniture van is far better than a tent; no sleeping in the operating shack; prepare for the worst weather, for it is better to sweat from heat than die from exposure; if you use a petrol alternator have enough tank capacity to run the thing for more than one hour; and don't forget to ground the alternator or power supply.

The 1960 N.F.D. was emphatically the best we can remember. We worked 29 portable and mobile stations. By Sunday evening we were all very tired, sore and grubby—but we will be back next year and perhaps win the Contest then!

Next month it is hoped to publish other comments of activity in the fast becoming popular National Field Day Contest—Editor.



Views of another multi-ported station, VK3OM/P, operating in the National Field Day. Left: Bill VK3JX and Andy VK3JZ operating a Panda "Cub" and ARAB. Right: Ron VK3OM and Ron VK3RN at the controls of a DX40 and home-brew 80 ft. and two HERO rx's. The 2 and 6 mhz gear is located between VKs 3JZ and 3OM.



transformer to compensate for the change in impedance. We believe that 40 and 80 metres cannot easily be worked simultaneously, but 40 or 80 can be used with any other band. Interference into the v.h.f. receivers was limited to occasional spots and did not worry v.h.f. reception, and there was no sign of the v.h.f. signals blocking the h.f. receiver.

Because of the present distribution of activity, we think that it is desirable to keep one rig almost solely on 40 metres phone and c.w., with occasional excursions using the same rig to 80 metres, when 40 is temporarily unproductive. Another all-band rig should work 20, 15 and 10 metres, probably in that order of priority. VK stations should be given priority over DX stations because the DX stations have to be instructed about the RST/NR. If the N.F.D. Contest approaches the R.D. Contest in popularity, it may be necessary to have another h.f. rig—but this is unlikely to happen for a few years. V.h.f. is limited with the number of stations which can be worked and the minimum requirement for gear would probably be top-class 2 and 8 metre rigs, not necessarily working simultaneously, and a 1 metre rig.

Antennae for v.h.f. are relatively easy, but the site must be located on a high hill having a good general command of

Hint for 122 Transceiver Owners

From remarks heard on the air, it appears that intermittently "blown LT fuse" is a fairly common occurrence.

A simple explanation was found for this trouble after many unsoldered joints and considerable time expended tracking it down.

As all the receiver valves have aluminium shields (with the exception of the output valve) which are earthed via the valve pin No. 1 by a metal strip, and all the sockets have exposed pin clips on top of the ceramic socket, it does not take long to work out the result, if the valve is pushed down hard into the socket.

In some cases in the series filament line, it merely shorts out one valve and in others, two valves, leaving the series resistors and the remaining valves to take the applied 12v. with danger of burnt-out filaments.

The valve shield strip and socket responsible for the blown LT fuse is V3A, as pin No. 1 is at earth potential and pin No. 8 is used as a tie point for +12v. LT wiring, consequently when V3A is pushed right down in the valve socket, pin No. 1 and pin No. 8 are

shorted, with another fuse to be replaced as the result.

It is suggested that a piece of insulating material be placed between the valve shield earthing strip and the valve socket pin clips.

As there is only 12v. d.c. to be provided for, something thin could be used, such as empire cloth or tape, mica, even a piece of adhesive tape would be adequate for the job.

The writer used Empire cloth tape, ½" wide, 5 mil. thick, cut to fit between three valve pins with a hole punched the size of a valve pin, to fit over centre pin. This was slid up the pin to cover the earthing strip. (With a little "goo" to hold in position if desired.)

—E. C. Manifold, VK3KIM.

— . . . —

TASMANIAN DIVISION (W.I.A.) HAS NEW BOX NUMBER

Readers are requested to note that all correspondence for the Tasmanian Division and the Federal Contest Committee of the Wireless Institute of Australia should be, in future, forwarded to BOX 851J, G.P.O., HOBART, TAS., except correspondence and cards appertaining to the QSL Bureau.

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Model 6 1/16" (Fixed)	6	6	0.25 oz.	6"	Electrical measuring instrument fine assemblies, hairsprings, R.F. pick-up and speech coils, hearing aid sub-assemblies, etc.
Model 6a 3/32" (Push-on)	6	6	0.25 oz.	6"	As for Model 6 (for extremely delicate work only).
Model 9 5/32" (Push-on)	6, 12, 24-27½	8.3	0.25 oz.	6"	Hearing Aids, Radio and TV Sub-assemblies, Coils, Electronic Instruments, Model Construction, Electro-Medical, etc.
Model 12 3/16" (Push-on)	6, 12, 24-27½	12	0.5 oz.	6.25"	Radio, Television, and Telecommunications assemblies.
Model 18 3/16" (Push-on)	6	18	0.75 oz.	7½"	For heavier work, heat capacity equivalent to that of most 80 watt soldering irons.

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MS P3.58

BOOK REVIEW

This month we have a number of items of very real interest to Amateurs. The first two items we are going to talk about are not books at all. For years, you have seen these advertised in the American journals, but they have not been available in Australia.

OHM'S LAW CALCULATOR AND REACTANCE SLIDE RULE

The first item is the Ohmrite Ohm's Law Calculator. This device can be manipulated to quickly answer any Ohm's law problem, as you would expect from its name. It is priced at 6/9 posted.

The second item is of a more complicated nature although it is similar in design. This is the "Shure" Reactance Slide Rule. With this device you can find inductive or capacitive reactance for any frequency between 0.1 of a cycle and 10,000 megacycles. On the other side of this slide rule are a number of scales permitting you to find the values of components for use in tuned circuits for operation anywhere in the frequency spectrum. This slide rule comes to you complete with an instruction booklet which will enable the reader to calculate any value he desires. Price 16/- posted.

Our sample from McGill's Authorized Newsagency, 183 Elizabeth St., Melbourne, C.I.

"CQ" LICENCE GUIDE"

No. 114 from the "CQ" Library, this book was written especially for those interested in obtaining an Amateur licence and should be of particular interest to the s.w.l. Whilst it has been written for beginners in the U.S.A., it still contains a large quantity of information of use to Australians.

There is a chapter on learning the code, complete with instructions for building a transistor code practice oscillator. This is followed by 80 odd pages crammed with typical examination questions and the correct answers to these questions. Used in conjunction with the standard text books, this publication could prove invaluable to the student.

Our copy from McGill's Authorized Newsagency, 183 Elizabeth St., Melbourne, C.I.

"KNOW YOUR OSCILLOSCOPE"

By Paul C. Smith

An inexpensive publication of 145 pages telling you in simple language

how to use your oscilloscope to best advantage. Oscilloscopes of various makes are described and so are some of the probes and other accessories that help to make the oscilloscope the most versatile measuring instrument available to the electronic industry.

Circuitry is discussed and waveforms are illustrated so that there will be no doubt about the measurements being made. Price 20/9, postage 1/3.

Our copy from McGill's Authorized Newsagency, 183 Elizabeth St., Melbourne, C.I.

"CQ" ANTHOLOGY"

The Best of "CQ" 1945-1952

This book, published in 1952 by the Cowan Publishing Corp., New York, contains a great number of articles that will be of interest to VKs. Such subjects as g.d.o.s., antennascopes, BC348, SCR522, discone antennae, the BC221 (SCR211) frequency meter and many others are covered. Well worth its modest price of 21/- plus 1/3 postage.

Our copy from Technical Book and Magazine Co., 295 Swanston St., Melbourne, C.I.

"STEREO HANDBOOK"

Written by that master of audio, G. A. Briggs, in his usual free and easy style, salted with the occasional touch of good humour and augmented by contributions from experts such as Cooke, Crowhurst, Kelly, Watts and West, this book is intended to help the Amateur to understand stereo and its implications.

The fifteen chapters contain no less than eighty-eight illustrations, most of which are original and maximum space has been allocated to pick-ups, loudspeakers and recording techniques in that order of importance.

The book is non-technical throughout and should be easily understood by any reader who, like the author, can count up to twenty. Price 17/9, plus 1/- postage.

Our copy from McGill's Authorized Newsagency, 183 Elizabeth St., Melbourne, C.I.

"RADIO & T.V. HINTS"

Edited by Martin Clifford, this is a very handy collection of hints and kinks pertaining to electronic work. The volume contains some hundreds of ideas which we all find useful in our daily work in the electronic field. It is a publication which comes from the well known Gernsback library and is recom-

Two-Band Crystal Locked V.H.F. Converters

I. MacMILLAN, VK3ZDG

It is sometimes desirable to use the same oscillator chain for two converters, and the problem arises how to choose an i.f. such that the same crystal oscillator may be utilised. This may be found by utilising the formula:

$$f_o = \frac{f_1 - f_2}{n - 1}$$

where f_o is the local oscillator frequency for the lower frequency converter;

f_1 is the lowest frequency in the high band;

f_2 is the lowest frequency in the low band;

n being the number of times the low frequency local oscillator is to be multiplied for use as the high frequency local oscillator.

Example:

It is desired to make a converter to cover the 50 and 144 Mc. bands, using the same i.f. tuning range, with a common local oscillator, using a tripler following the 50 Mc. local oscillator stage.

Substituting:

$$f_o = \frac{144 - 50}{3 - 1}$$

$$= \frac{94}{2}$$

$$= 47 \text{ Mc.}$$

The i.f. at 50 Mc. is therefore 50 — 47 = 3 Mc.; at 51 Mc, 51 — 47 = 4 Mc. At 144 Mc. it is 144 — (47 x 3)

$$= 144 - 141$$

$$= 3 \text{ Mc.}$$

and of course at 145 Mc. it is 145 Mc. — 141 Mc. = 4 Mc., etc.

Note that this technique cannot be used with harmonically related bands, as a harmonic of the local oscillator will fall on the band edge in each case.

* 1 Norfolk Road, Surrey Hills, E.12, Vic.

mended to all interested in electronics, either professional or amateur. Price 10/3, plus postage.

Our copy from McGill's Authorized Newsagency, 183 Elizabeth St., Melbourne, C.I.

"101 WAYS TO USE YOUR V.O.M.

AND V.T.V.M." and

"101 WAYS TO USE YOUR OSCILLOSCOPE"

These are two of what appears to be a new series of books on the use of test equipment. Each of them takes the full quota of jobs for the respective instruments and describes each in lucid detail giving information on many applications which the average equipment owner would find difficult to recall at short notice and hints on easily made "gimmicks" that add materially to the usefulness of the instruments dealt with in the books. Prices are 20/9 and 25/9 respectively, plus 1/- postage.

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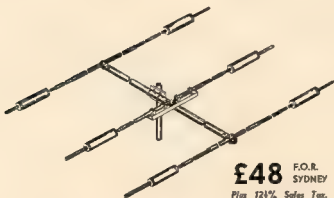
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With proper installation, your TA-33-JR will provide up to 8 db. forward gain over a reference dipole and will offer 25 db. front-to-back ratio. The TA-33-JR will handle up to 300 watts input to the final amplifier at 100% amplitude modulation.

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PROMINENT AMATEUR PASSES BEYOND THE VALE

JOHN MOYLE. VK2JU—amateur, writer, engineer and musician—passed away on the 10th March after a short illness. He is survived by a wife and two daughters.

Born in Malvern, Victoria, on the 28th February, 1908, John Moyle crammed into a short life of 52 years more than most people do in a greater number of years, and in so doing put into his widely varied interests more than he ever took from them.

He was educated at Scotch College and at an early age gave every indication of ability in writing, composing, debating and musical appreciation, all of which ultimately proved to be his avid interests throughout his career. The principal of Scotch College, Dr. W. S. ("Bill") Littlejohn, wrote in John's testimonial. "The list of offices which he holds in the school shows that he is a lad of high ability and of exceptional energy. He has a marked literary faculty, and if he finds scope for his powers in that field, he may be relied on to do his utmost to bring distinction to himself and his employer. He has earned the thanks of the school for his excellent work as Editor of the 'Scotch Collegian'."

As Editor of the school magazine, John showed his ability in this field, fruits of which are written throughout many years of administration paperwork of the Wireless Institute of Australia, the Uniform Divisional Constitution of the Institute being primarily John's work as a typical example of his contribution to the affairs of the W.I.A.

Apart from his writing ability, John had a remarkable ability in the debating field, winning the Scotch College debating prize in his last year at school in 1926, during which year he also wrote the Colclough Prize Song.

Those Amateurs who have experienced John's debating ability at Federal Conventions will recall it as clear-cut, concise and to the point, leaving no doubt as to his reasons and always delivered in a manner typical of a person with clarity of thought well above average.

His first job in radio was with 3DB Melbourne where he assisted Ren Miller (well known to Melbourne listeners for his cricket broadcasts with Charlie Vaud in the 30's) in the commercial advertising department. During this time he also wrote short stories and technical articles on radio for the "Listener In" (Melbourne).

In the depression years, he edited the "Gippsland and Northern"—a Melbourne farming magazine—where his enthusiasm was directed to the car-reviewing section. Interested in everything mechanical, John was always extremely proud of the performance of his own motor car, maintaining it always in perfect running order.

In 1932 he joined the staff of the Sydney publication, "Wireless Weekly,"

in charge of answering technical queries. He later became Assistant Technical Editor, then Technical Editor, during which phase of his career he gave regular weekly talks on the technical side of radio over station 2UE Sydney.

In April 1939, "Wireless Weekly" became a broadcasting programme weekly publication and its technical activities were separated into a monthly magazine, "Radio & Hobbies". From being Technical Editor at its inception, John became Editor a few months later—a position he held till his death.



THE LATE JOHN MOYLE, VK2JU

Actually, John dropped his editorial duties during World War II, from 1941 to 1946. He joined the R.A.A.F. where he rose to the rank of Squadron Leader in charge of all radar publications at the Melbourne headquarters. Part of his work was producing Service manuals (many of which are still in use) which called for a high degree of journalistic talent and experience for which John was well fitted.

Apart from his great interest in writing and technical radio, his early appreciation of everything fine in music led him naturally into the field of audio with the accent on the reproduction of recorded music from disc, and latterly from both disc and tape. During the time he was making weekly technical broadcasts on station 2UE Sydney, he was also connected with the presentation of regular Sunday evening broadcasts entitled "Serenade to Music."

His work never finished when he left his office desk. Every minute of his time, often well into the early morning

hours, was spent writing, hamming, experimenting; he devoted many weeks of the year to music, writing the record review in "Radio & Hobbies", which had the unique reputation for combining keen musical appreciation with informed technical appraisal, and forever experimenting with audio amplifying equipment in search of the highest standard in high fidelity reproduction.

His work in this field led to the formation of the Sydney Recorded Music Society, of which John was a foundation member, and in more recent years he gave demonstrations in Sydney of "stereo" and "monaural" sound reproduction which were hailed as being the finest ever heard in Australia.

After the last war when the Postmaster-General's Department issued permits for the installation and use of v.h.f. mobile radio-telephone systems, John capitalised on his long Amateur experience by putting into service, with the assistance of the technical staff of "Radio & Hobbies", the first of such installations to be used by a daily newspaper in Australia. His experiments, with Amateur equipment, dates back to 1946 and it is to his credit that the final equipment which went into this first installation is still in service with the Sydney "Sun" newspaper.

As a licensed Amateur from 1932, he gave to this hobby the same intense interest and concentration as he gave to everything else he did in other fields, devoting many years to research in the v.h.f. frequencies at a time when this was new to Amateurs in Australia.

As a member of the New South Wales Division he gave many years of his hard pressed time to the Wireless Institute of Australia both in the Divisional and Federal administration. He was Federal Councillor and President of the N.S.W. Division for some years, and even after he dropped out of administrative duties he continued to devote his interest to the affairs of the Institute.

In 1959 he was selected to represent the Wireless Institute of Australia as an officially accredited member of the Australian delegation to the Administrative Radio Conference of the International Telecommunications Union held in Geneva, Switzerland. He devoted to this task, despite failing health which resulted in his death, the same tenacity of purpose which he exhibited throughout his career. Members of the Australian and overseas delegations praised highly his work in Geneva on behalf of the Australian Amateur Service.

It is with deep sorrow that the Federal Executive, Federal Council members of the W.I.A. and Australian Amateurs generally, mourn the passing of a truly great Amateur. Sincere condolences are extended to Mrs. Moyle and her two daughters.

HINTS AND KINKS

PARALLEL-FED PLATE MODULATION

The circuit shown in Fig. 1 makes use of a modulation principle that is more or less standard in commercial broadcast transmitters but is seldom used in Ham equipment. It consists of two capacitors and one filter choke in addition to the usual plate modulation components.

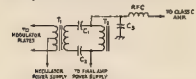


Fig. 1—Parallel-fed plate modulator. Capacitors C1 and C2 should have a voltage at least twice the modulated amplifier plate voltage. C1, C2—4 μ F. C3—0.005 μ F, bypass. T1—Modulation transformer. T2—Filter choke, 50 or 30 henrys (capable of carrying amplifier plate current).

Capacitors C1 and C2 isolate the r.f. amplifier plate voltage from the modulation transformer and if, for some reason, the r.f. amplifier is turned off before the modulator, the choke will act as a load and protect the modulation transformer.

—Michael Novick, K5EKC, "QST," Oct. '59.

HOW IS YOUR MODULATION?

When watching a c.r.o. monitor recently, I was reminded of an article I had read somewhere sometime. I think it was in a pre-war issue of "Radio," but I wouldn't be sure. Anyway, it went something like this.

An a.m. transmitter is unsymmetrical for overmodulation, cutting off abruptly with splatter at 100% downward modulation, but it is usually capable of going beyond 100% upward modulation without ill effects.

Now it so happens that the waveform of the male voice is also unsymmetrical,

having higher peaks in one direction. So when the two are put together, it pays to see that the peaky side corresponds to upward modulation.

From memory it paid 6 db. extra audio on the carrier for the same peak downward modulation. As there is a 50/50 chance that your modulation is the wrong way round, why not reverse your microphone connections or one side of an audio transformer and see if you have been missing out.

Of course, this does not apply if you use a clipper. Nor if you are a female of the species as your waveform is symmetrical.

A. K. Reed, VK6AKZ.

D.X.C.C. LISTING

Listed below are the highest twelve members in each section. New members and those whose totals have been amended will also be shown.

PHONE

Call	Cer. Cnt.	Call	Cer. Cnt.
VK6RU	2 246	VK6KW	4 194
VK6MK	43 236	VK6HR	13 182
VK6AB	45 224	VK6HZ	3 176
VK6PJ	21 212	VK6RW	23 164
VK6WL	14 211	VK6EE	10 163
VK6ATN	36 204	VK6DB	21 161

C.W.

Call	Cer. Cnt.	Call	Cer. Cnt.
VK6CX	26 263	VK6RR	8 216
VK6PJ	29 244	VK6XU	45 215
VK6B	19 242	VK6YL	39 208
VK6FH	15 238	VK6RU	16 207
VK6NC	18 226	VK6BY	45 203
VK6EE	6 225	VK6EO	3 191

Amendments
VK6JC — 54 164

OPEN

Call	Cer. Cnt.	Call	Cer. Cnt.
VK6RU	8 260	VK6NC	7 259
VK6PJ	33 251	VK6WL	46 229
VK6ACK	6 250	VK6XU	61 221
VK6MK	74 241	VK6HG	3 215
VK6HR	7 233	VK6JE	12 210
VK6HZ	4 231	VK6ATN	66 210

Amendments
VK6JC — 53 150

SELECTION OF AN ANTENNA TOWER

(Continued from Page 9)

rotator and heavy-duty 10 metre ground-plane antenna. Radial fins project out in four directions from both the bottom of the post and that portion just under the surface. It is set into about five feet of sand, the last two and a half of which is watery. In fact after reaching a depth of three feet, it was necessary to bail continuously in order to complete the hole. This post shows no "budge" even when the tower is tilted horizontally across it with all weight on the ground post. Mounting the ground post in sand or earth, rather than in concrete, definitely helps to prevent shear at the ground line, since the soil will tend to compress under force of the post. Radial fins such as described will withstand a pressure of 4,000 lbs. per square foot at a depth of five feet in normal soil. At six inches below the surface, the figure of 1750 lbs. per square foot would be approximate. Also, the ground post itself will withstand considerable pressure in the soil. A $\frac{3}{4}$ inch o.d. ground post set five feet into the soil will withstand a pressure of 1150 pounds per lineal foot averaged along its five-foot length underground. This particular tower was recently moved from one QTH to another in a matter of three hours, with three willing hands working on the project.

TOWER PROTECTION

Towers are often finished off in a traditional aluminum color. An often neglected and expensive mistake is that of not determining the proper finish for the area where the tower is to be used. In areas which have a high incidence of atmospheric corrosion, it is advisable that the tower be hot-dip galvanised by total immersion after fabrication. This will protect all surfaces, including the internal surfaces of the tubing. On the other hand, if the corrosive action in the atmosphere is low, a painted tower will, with care, give lifetime service.

The serious Amateur Radio Station owner will do well to give much careful consideration when he selects a supporting tower for his rotary beam. It is a commodity which must last for years and not become obsolete. But, it must be able to do a man-sized job.

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Maurice Cox, WIA-L3055
Flat 1, 37 Boyd Crescent,
Olympic Village, Heidelberg,
N23, Victoria.

Greetings my fellow short wave listeners. I hope you are all well and are hearing lots of DX. I myself won't be writing much this time as I have just procured an HRO 24 hours ago and it's taking me all my time to keep away from it. Just for interest it's a much modified HRO. In fact it's never been used so I am feeling very good and think I am a lucky guy. Now down to business.

VICTORIA

Bert Siebing is back with us again looking much better but has a long way to go yet to full recovery. Bert to less work and more listening to DJ, Bert, hi; anyhow it was great to see him back with us at the last meeting with his brother Jim, another potential L.W.I. member. The meeting was very pleasant to see 17 members present to hear a very fine talk by George Baty, 30M. I only wish those who didn't come will come next time, because it was an excellent evening and enjoyed by all. Many thanks again, George. Incidentally, the talk was on the art of Q&A and we learnt a lot.

We still haven't heard yet if our meeting night for a Friday has been approved of yet by Council, but we will soon. So chaps, come along, I think you'll find it much better. Yours truly country score has gone up to 33 confirmed with cards from OHNZ, HHXCZ, SMIDQ, VUJNR, VFJDC, and URZBU. Tom Hayward has been having trouble with his Eddystone, but by the time this comes out he should be back on deck again. Ian Thomas is back at the University and has passed his L.A.O.C.P. certificate. OM.

Haven't much of any activities from President Michael Ide. He's a silent worker. Jan Woodman wasn't with us last time but he's taking the reigns of arranging visits, etc., for us. Ron Young, up at the back, sits, listens and doesn't say much at all; you know what, he'll learn something that way I'm sure. Ron has an Edvestone rx—an all-world six

Still no sign of our past minute book or s.w.i. cards from VK5SQX, Ian Hunt. I wonder if some of the Amateurs in VK5 might jog his memory because we would like it, even if it's not written up, and especially the s.w.i. cards.

Mac Hilliard, the strong, silent type—sometimes—has gone mobile listening on 6 mx with a new car. Sorry I missed reading your letter at the meeting, Mac, but will do something about Contest very shortly.

Now about writing me a line sometime about yourself and your doings, come on now, it's not hard and it's nice to see your letter in print. We go onto a little information which is a little different from the other two. The most famous swiftness in the world—none other than Eric Trebilcock, BERS:90. He does 99.9% of his listening on c.w. A3 has little appeal to him, as a note at the end. He heard 100% of the c.w. A3, and he heard 100% of the c.w. A3 and he has received QSL from all countries so far this year. Good show, Eric, all the very best for the future. Would like to hear more about you sometimes, in fact every month. I like to hear from you, and I think that we can all learn about from you, some hints and kinks on listening, etc.

Well chape this is all from me so now on to the other States. Don Grantley BERS1002 reports the following for us.

THE UNIVERSITY OF CHICAGO PRESS

Awards.—This month's award comes from Japan and is known as the "Japanese Century Cities". Available to all a.w.l.s. who can produce cards from licensed Amateurs in any one hundred cities of Japan. These cards must not be dated prior to 30/7/52 and ten I.R.C.'s must be forwarded to the Overseas Committee, J.A.R.I., Box 377, Tokyo.

B.E.R.U. Contest. It would seem that our two R.S.G.M. members were the only B.E.R.U. entrants this year. BERS105 remained on 14 megs and scored 890 points for 28 zones, whilst BERS102 scored a mere 150 on 80 mx. BERS195 has passed on a resume of his 1998 activities. 1,022 reports sent out for a return of 713 cards for 112 countries and 39 zones—missed zone 2.

There can be no doubt that this is a really fine effort, and shows just what a keen listener can do when he really tries. As a matter of interest, Eric is listening solely on 14 Mc. this year. This is rather unfortunate as I will have to move down and hold the c.w. fort on 40 mcs.

DX News-SV0WTT (Crete), now in new hands, will QSL reports 100%. He won't answer any reports directly and requests all cards via the I.S.W.I. Bureau. 80 mx still providing L3932 with plenty of Ws on c.w. in the late afternoon. VK9RO and VK3JZ heard regularly in G land on 40 mx. UA0KYA is in zone 35. J2P0C, via Q3DYD or R.S.G.B.: FB8CL, Box 730 Tananarive, Madagascar, for QSL.

Personalities. Long and interesting letter from our very keen contest operator, VEY Rod de Balfour. We don't hear a lot of Rod these days as this 18-year-old New South Wales student is concentrating on his studies at the Sydney University. However, he has the happy knack of bobbing up for the R.D. and making us all look rather silly, year after year. His contest record would appear rather akin to that of ERU Gar in use is a 6-tube super regenerative receiver (P.M.S., Sept. '57), cubical 10 to 15 and 20 (the latter working also on 10), 20 metre half wave, and 40 metre half wave dipole.

NEW SOUTH WALES

Just a note to keep the boys down your way informed. We held our monthly meeting last night, the first for the year and at the new clubroom. A good night was had by all, for they did not leave the place until 3:45 and the feast of 140 dishes was present and we mainly had general discussion after short lecture by myself on radio direction finding with the aid of a Heathkit transistor broadcast band set. A nice piece of work which is made for the job. Has a loop stick antenna and an S meter. When in use the compass cards are turned so one can work out the bearing on the station.

The meeting discussed the production of a handbook for the Group. This could be used by all the Groups in Australia and would like to hear the members' ideas on such a move. It would cover all aspects of sailing for the new, e.g. QSLing and how to report, aerials. The cost would be about 1 or 2 shillings. Tell the boys to think it over.

HIV/AIDS IN SOUTH AFRICA

Here are a few notes from the VK5 S.W.I. Group for the month. As regards the Bush Fire nets, two more a.w.f.s, Les Janes and Gary Smythe, have been operating at VL8AM base. Al about half past eight on 1th Feb., Les and Gary were coming through here at a good signal strength. VK6HP, L8051 entered the N.F.D. Contest on the 40 and 80 mx bands and compiled a fair tally. The activity this year was very good, but band conditions on 80 mx were not very good. As the notes on band. do not think any of the other s.w.f.s. in Mt. Gambier entered the Contest this year.

Dele LS035 is hoping to get a new centre-fed antenna up soon to replace the old long wire. A fifteen mhz beam has been put up here to add a bit more gain to the rx. This antenna, which is 23 ft. high, is fed with 72 ohm coax and is working very good. Some good DX has been heard on 20 and 15 mhz in the afternoons and early evenings, and in the last week 20 mhz has been open to Europe at about 8 o'clock until 5.30 p.m. E.S.T. A total of 75 countries have been heard, but no DX QSLs received, as only a very few cards have been

Thanks L5031 and the rest of the gang, the dead line is the 30th of each month.

TAKING STAIRS

The Feb. meeting was quite a night of interest and considering our small numbers, a good percentage of the members turned up. Mr. M. C. Hooper gave an interesting talk on his newly acquired Glencoe rx front-end (conventional type) which was a real find. Unfortunately, somebody or something (perhaps Foo is back again) had tampered with the oscillator slugs as we were receiving anything but the Ham bands. Fortunately, our lecturer has a good even disposition and promised to return the following month to give the Group another practical demonstration when the unit is sparking on all six plugs—sorry, bands.

A letter from Ian Thomas, L3065, was read to the members, also particulars re Radio Prague Contest—thanks Ian. I have not heard anything yet (19th Feb.) so I guess either my time calculations are incorrect, or this neck of the woods is in a null area—so my trip to Czechoslovakia looks like not coming off.

Last but not least in the business was the bulletin of the N.S.W. Group sent by Tim

Mills. Now look chaps, Tim is doing a sterling job but he needs our help, not only in W3B but in all States. May I draw attention to the fact that Tim is not only a s.w.l. but also a c.w.l. and a w.l.g. I am sure that in my humble opinion. We need more licensed Amateurs taking an interest in the S.W.L. Groups to provide lectures and help members to become c.w.l.s. and w.l.g.s. I am sure that the Radio to the Listener. All Amateurs are listeners in reality or they just wouldn't get contacts.

Now come on you chaps, someone helped me to learn how to help, but at the rate you say keep the bands free, but at the rate you are going, when you all die off there won't be any Amateurs—if you don't do something about it. (Likewise, there will be no something about it because anything is better than nothing.) Now don't just read this and do nothing. Contact Tim Mills or your local S.W.L. Groups and offer to help. Remember the Amateurs. Good luck to you all. You are paid for your labors and keep the s.w.l. active.

LETTER FROM SWEDEN

Here's a letter that may interest you all and it is written to VK3AOM from Sven Elvling, BM3-3104. I receive a lot of letters and cards and most of them are from friends who want me to hear from such a good friend like you. Here I'm doing a very b.f. job with my Mail-crafter EK7L and the new super 7.b antenna. I have two separate long wires, 2L With Ham Radio I have so far received QSLs from many countries, which should be near the top of the list. I live in Stockholm in Sweden and still log lots of DX. ENIGW in New Wap was heard on 14 Mc. u.s.b. It being the latest one. I also log some stations on 40 Mc. and also log W/K stations and on 40 I also log U.S. and all DX coming through there on 80 mcs. also some DX from U.S. has been heard. Only one more around 14 Mc. has been heard. DX time on the Ham bands. Have re-started as a b.c. listener, closed b.c. listening in 1966 and began listening to Ham's but now I will buy a better receiver than the one I have. I visit short wave countries confirmed, and that is a very good thing, but two fellows in Sweden have 150-watt G.T.'s right until I reach mine. I am a novice and can't do much except what the Bureau, so sure some of the fellows will QSL. Lately no Vks at all here on 40 mcs. but I can confirm some of the ones I hear lately. We heard several times, but I am excited for his several radio clubs and radio papers and I need lots and lots of DX information from you. I would like to know if you could send me a w.i.d down there I would be most happy to know if you can hear stations at: Falkland Islands, 3594 G.M.T., 3540-0158 G.M.T. (3506) G.M.T. 3594-0158 G.M.T.; Ascension Island, 3594 G.M.T.; Radio Sordog, New Guinea, 3594 G.M.T. 0150-0303, 0630-1300 G.M.T.; Gilbert and Ellice Islands, Sunday 3594-0315; Friday 3594-0315; I would like to know if you can hear 3594 G.M.T. 1830-1030 G.M.T.; Cook Islands, Thursdays 3594-0630 G.M.T. on 4965 Kc.; Chatham Islands 3594 G.M.T., 1145-2315 G.M.T.?, new, shipping info.

Est. 140000

	Heard	Confirm.	Zones
BERS106, Eric Trebilcock	352	244	40
BERS105, Don Grantley	187	80	38
Rod de Balfour	188	106	36
L3053, Maurice Cox	149	58	18
L3065, Ian Thomas	109	14	11
L3072, Tom Haywood	85		
L3074, Mac Hilliard	187	80	27
L3015, Mike Ide	85		

ANNOUNCEMENTS

ZONE CONVENTION AT BALLARAT

The South Western Zone of the Victorian Division of the Wireless Institute of Australia will hold their Zone Convention at Ballarat on Saturday and Sunday, 2nd and 3rd April 1960. Dinner will be at 6.30 p.m. at the Star Street (opposite G.P.O.), at 6.30 p.m. At 9.30 a.m. on the Sunday a Picnic will be held at Lake Burrambool on the Great Western Highway. All Amateurs are welcome.

ERRATUM IN

AMENDMENTS TO CALL SIGNS

Among the Queensland new call signs published in the March issue, the name and address of VK4ZCI was listed erroneously. The correct details are VK4ZCI—I. H. Campbell 36a Oceana Terrace, Manly, Queensland.

NEW EQUIPMENT

AR85: 9 Mc. Phasing Type S.S.B. Exciter complete with Audio P.S.N., Linear Amp., Speech Amp., Selectable Sidebands and Phase Modulation. Valve types: 12AT7 Audio Amp., 12AT7 Audio Driver and Xtal Oscillator, 12AT7 Balanced Audio, 2 x 6AL5 Diodes, 6BA6 Linear. Less V.a.ves £25/10/0

AR85A Similar to above but includes Mixer 6BE6 for multiband operation. £27/10/0.

AR85B S.S.B. Mobile (7 Mc.) Phasing type, similar valve complement to AR85 unit, with 807 P.A. and 6BE6 Clamper Unit. Fits readily in glovebox of most cars either 8 or 12 volt. Complete with valves, Audio P.S.N., but less Power Supply, input to 80 watts. By the addition of mixer stage and P.A. all-band operation can be had for home station use. Xtal operation with provision for external V.F.O. Price £27/10/0.

AR860 All-band Band-switched Bandwidth Tx. Includes: AR85 Exciter, 6CK6 Mixer, 6AG7 Buffer, 807 P.A., 6BE6 Clamper. Requires external V.F.O. mixing frequencies (BC467 modified), and Power Supplies. Pt-Coupled Output metered in P.A. Circuit. Cabinet size: 15 in. wide x 9 in. high x 10 in. deep. Power Supply requirements: 250 volts 120 mA.; 800 volts 100 mA. Price including valves £28/10/0.

USED EQUIPMENT

SPECIAL FOR APRIL: 1 only 150 watt A.M. Transmitter Two units: (1) Table Top R.F. Section, Geloso, 5148, 813. (2) Power Supplies, Modulation and Speech Clipper, all in heavy steel box. Unit is only 12 months old and in excellent order. Price £28/0/0.

ONE ONLY imported Phasing type 9 Mc. Sideband Generator complete with VOK. Attractive Cabinet, in excellent going condition but less valves (standard types). Has 9 Mc. linear stage added. Price £28/0/0.

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Commercial—0.82% £2/12/6, 0.91% £2/15/6, plus 12½% Sales Tax.

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PREDICTION CHART, APRIL '60

Mo. E. AUSTRALIA — W. EUROPE S.B. Mo.

Mo.	E.	AUSTRALIA	—	W.	EUROPE	S.B.	Mo.
45	0	2	4	6	8	10	12
26	12	14	16	18	20	22	24
31							
16							
7							

E. AUSTRALIA — W. EUROPE L.R.

E.	AUSTRALIA	—	W.	EUROPE	L.R.
45	0	2	4	6	8
26	12	14	16	18	20
31	22	24			
16					
7					

E. AUSTRALIA — MEDITERRANEAN

E.	AUSTRALIA	—	MEDITERRANEAN
45	0	2	4
26	6	8	10
31	12	14	16
16	18	20	22
7	24		

E. AUSTRALIA — N.W. U.S.A.

E.	AUSTRALIA	—	N.W.	U.S.A.
45	0	2	4	6
26	8	10	12	14
31	16	18	20	22
16	24			
7				

E. AUSTRALIA — N.E. U.S.A. S.B.

E.	AUSTRALIA	—	N.E.	U.S.A.	S.B.
45	0	2	4	6	8
26	12	14	16	18	20
31	22	24			
16					
7					

E. AUSTRALIA — N.E. U.S.A. L.R.

E.	AUSTRALIA	—	N.E.	U.S.A.	L.R.
45	0	2	4	6	8
26	12	14	16	18	20
31	22	24			
16					
7					

E. AUSTRALIA — CENTRAL AMERICA

E.	AUSTRALIA	—	CENTRAL	AMERICA
45	0	2	4	6
26	8	10	12	14
31	16	18	20	22
16	24			
7				

E. AUSTRALIA — S. AFRICA

E.	AUSTRALIA	—	S.	AFRICA
45	0	2	4	6
26	8	10	12	14
31	16	18	20	22
16	24			
7				

E. AUSTRALIA — FAR EAST

E.	AUSTRALIA	—	FAR	EAST
45	0	2	4	6
26	8	10	12	14
31	16	18	20	22
16	24			
7				

W. AUSTRALIA — W. EUROPE

W.	AUSTRALIA	—	W.	EUROPE
45	0	2	4	6
26	8	10	12	14
31	16	18	20	22
16	24			
7				

W. AUSTRALIA — N.W. U.S.A.

W.	AUSTRALIA	—	N.W.	U.S.A.
45	0	2	4	6
26	8	10	12	14
31	16	18	20	22
16	24			
7				

W. AUSTRALIA — N.E. U.S.A.

W.	AUSTRALIA	—	N.E.	U.S.A.
45	0	2	4	6
26	8	10	12	14
31	16	18	20	22
16	24			
7				

W. AUSTRALIA — S. AFRICA

W.	AUSTRALIA	—	S.	AFRICA
45	0	2	4	6
26	8	10	12	14
31	16	18	20	22
16	24			
7				

W. AUSTRALIA — FAR EAST

W.	AUSTRALIA	—	FAR	EAST
45	0	2	4	6
26	8	10	12	14
31	16	18	20	22
16	24			
7				

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

7 Me. C.W. FOR THE DX MAN
Editor "A.R." Dear Sir

7 Mc. c.w. is still capable of providing plenty of fun for the DX man and this band is worthy of more attention in view of its precarious position as outlined in the report on the Geneva 1988 I.T.U. Conference and also the remarks of overseas contestants in the last VK-ZL Contest.

The following is a report on conditions for the month of February 1960. At the beginning of the month early morning path to Europe and U.S.A. East Coast was open with excellent signal strengths. Towards the end of the month Europe dropped right down but South Africa was still good. Night path to the U.S.A. was good but maximum signals seemed to be heard after 9 p.m.

The following is a list of stations worked during February: ZSAPB, ZSAGH, ZS3AJ, ZS3RN, ZS3WJ, VQ4G, 4X4WF, VQ3E, G3LEF, G5PFG, PA0VO, D4ARKA, UN8KTV, VP5ME, 14 JAa and 197 Ws which included 40 on the Saturday night and 40 on the Sunday night of the A.R.R.L. Contest. A number of W3 and W3 were contacted at 2100 GMT via the long path. On 7/3/60 W3KQT was worked at 0300 S.A.T. with 51 report.

Countries heard but not contacted yet:
UBSKIJ, DLIFF, SPGRF, GJNSP, UAIDZ,
PYTNS, UASLI, YUSPOP, HASKFR, GMJFLZ,
YURADE, UBSIT, EASCV, OH4OK, ON4 and
many more.

Yes, OM, forty metres still packs a wallop and more recruits are wanted.

—104— Cawston, YANE (ANCO 1947).

A "PINK PAGE" SECTION FOR THE
AMATEUR CALL SIGN BOOK

Editor "A.R.," Dear Sir,
Valuable service would be rendered to the
active section of the Amateur fraternity
through the publication in next and subsequent
year's Call Sign Book of an equivalent to the
"Pink Pages" of the Telephone Directory.

This list, in addition to Call Sign and Name, could have the first or Christian name, followed by a short statement of hobbies other than Amateur Radio. In addition to providing this valuable personal information permitting us to see at a glance some kindred spirit with hobby inclination of our own, the QSO could start immediately on friendly "first-name" terms.

To finance this "Pink Page" section of the Call Sign Book, all ACTIVE experimenters could send their desired listing, stating first name and hobby, coupled with a small fee of say, two shillings, or to make the transaction complete, add this charge to that of the Call Book (including postage) and so ensure early delivery of the volume. It is, of course, the same as the book the Publications Committee buy for direct dealing, thereby saving the expense of distribution through syndicate channels.

All with whom I have discussed this proposal are in agreement and would gladly support the inclusion of such a section in all future Call Sign Books. It would also serve to weed out the "drones" who are never heard on the air or attend Institute meetings.

Coupled with this should go the complete deletion of titles, etc., in the "White Page" section of the Call Signa. Amateur Radio is one of the most friendly of hobbies and could be well rid of the tags "Doctor", "Reverend", etc. Without fear of effective contradiction, I would state that not one of those listed as "Doctor" has any legal or moral right to this title, they being no more than Medical Bachelors who have presumptuously assumed this title.

Examination of the records of the University of Sydney reveals that of 5520 combined degrees of Baccalaureate in Medicine and Surgery (to the end of 1956), only 129 qualified for Doctorates; the overwhelming majority having rushed forth to a brass plate engraver to have the phony tag of doctor placed before their names immediately they had been handed their Baccalaureate degree on graduation day.

As regards the "Reverend" gentlemen, any QSO with these does not proceed far before the professional tone of voice betrays the vocation of the call sign holder.

When I attended Newcastle High School between 1909 and 1913, I was known as "Professor" Joe Reed owing to my habit of always having some scientific tome under my arm, and ability to expound on the marvels of Halley's Comet then visible in 1910. In addi-

Wm. I still have in my collection of souvenirs of yesterday a copy of the Newcastle School Teachers' Journal for July 1911 in which I wrote an article describing the construction of a "Wireless Spark Transmitter and Crystal Receiver". The Headmaster listed me at the head of this article as "Professor" Joe Reed, pupil of Newcastle High School. To this day I am known amongst my old cobbles of Newcastle as "Professor".

Should the Medical Bachelors and Reverend Gentlemen fight for the retention of their phony and sanctimonious tags in the Call Signs of the Navy? The answer is, of course, no. The Navy has already been forced to surrender its stances, and is now to be listed in nature (not forgetting the brackets and inverted commas) as "Professor", and so that my old pal, Wal Hannan, VICAR, does not feel out in the cold, he, as a member of the 1811 Cayenne Expedition, suggests that the bracketed tag of "A.P.F." (Antarctic Polar Explorer) would fill the bill nicely. Incidentally, once having seen Wal swing about in his bamboo thicket at Yerrigal where he selects nice 40 degree Fahrenheit for making you be excited in overlooking the full stops between the A, P, and E.

However, looking aside, let the Publications Committee and the writer hear from fellow experimenters, medical bachelors and Reverend gentlemen regarding this proposal to incorporate a "Pink Page" section in all future Call Sign Books listing first names and hobbies.

—J. G. Reed, VK2JR.

[This letter is published for its general interest and the Publications Committee welcomes comment regarding the inclusion of a special section in the Call Book.—Editor.]

S.W.L. REPORTS

Editor "A.R.," Dear Sir,
I have been reading quite a bit of comment on a.w.l. cards in "A.R." recently plus a few articles by different Amateurs on the a.w.l. situation. So here goes with my own comments on the position.

Since 1966 I have handled quite a considerable number of s.w.i. QSL cards for numerous VKO stations plus VR1B.

VHF

(Continued from Page 22)

who are registered listeners were heard first on two occasions. Barry's 1 mhz oscillator was used for the fox and worked very well. Tone for both tx's in the hunt was supplied from relaxation oscillators mounted on a simple lug strip. Power for the 1 mhz gear was only forthcoming at 8 o'clock Saturday afternoon when I substituted my transistorized power supply, which worked fine. I might add that it was the first time anything like that has happened at this QTH.—GEAW.

TASMANIA

7LZ has continued his VK3 DX working and has now worked 32AV at Geelong, 3ALZ in Melbourne, and 3ZAT at Sale. Conditions are poor similar to those of the last deepened contacts, fades, probably due to the low station equipment on 238 Mc on 24/2/65. QSOed 3ZAV R5, S5 both ways this about 230 mils. 29/2/65 worked 3ZAT at 3247 7LZ R5, S5 at 3247. Col. worked David and 1/3/60 7LZ heard by 3ALE S7, but both 144 and 288 Mc. peaked up. These contacts serve as a present guide to similar equipment. DX should be just as good as 144 Mc. DX. Of interest is that Tv Channel 3 and 6 stations have started testing from Mt. Wellington.

GENERAL NOTE

VICTORIA
The writer regrets that due to lack of 2 mx gear he is unable to contribute any news re 2 mx in Melbourne. We hope to overcome this problem soon but many pressing problems outside radio channel the activities away from 2 mx projects. Would someone in Melbourne care to report on 2 mx activities? I'll be only too pleased to hear from them by the end of the month.

John 3ZFG has departed for Maxwell where it is felt that being in a t.v. fringe area (temp.) operations will be limited, wish you the best of luck. John 3ZFE moved QTH to south of the Yarra. Less QRM for northern suburbs? 3ZDK now works 6 and 2 mx. Ken is rather tied up at the moment. Hope everything works out OK. Ken 3ZGD recovered from his recent illness and is currently battling with boils; he says that you sound as if you won't be sitting on them! Bert is now running a new rig and sounds quite nice. Certain gentlemen could not recognise the modulation when the

Upon receipt of the last batch of QSL cards I was prompted to have a look through the 1st 10 QSL cards that I received. There were 25. Of these 25 cards only nine indicated the station with whom the Amateur was in contact. 14 cards stated that they just heard the contact and made no mention of the contacted station. One card heard WRIB calling CQ. One heard him calling QRZ and gave RST as 599 and in this case he had the call sign as

Now perhaps to ensure that a s.w.l. station actually heard the DX station, and not the other side of the conversation, it would be a good idea to give the report that the DX station gave the other. I wonder how many s.w.l. reports are confirmed by saying they heard the DX station and actually they heard the other end of the conversation?

There is even a feeling that if one s.w.i. sees a QSL card held by another s.w.i. he copies the information to a card of his own and sends it off. This is indicated by the lapse of time that occurs between the date of the report and its receipt by the Amateurs.

One pleasing thought about these a.w.l. cards I just received, is the fact that none of them are VK cards. They mainly are UA, OK, HA, and YO cards. I must congratulate the VK boys on the layout of their a.w.l. cards and especially Eric Trebilcock's method of report. As a matter of fact, if you have forgotten what you said in your QSO with the other station, Eric could probably tell you about it.

Frank Rine (VK6QI) has been very helpful with the VK6 a.w.l. boys and deserves a pat on the back with the way he has helped them with advice on the layout of their cards. It is certainly a pleasure to receive a VK a.w.l. card and answer it. It is difficult to solve reports in Russian and what have you, and to decipher addresses and a.w.l. numbers on foreign cards, when no effort is made by the a.w.l. to put it in English.

It is essential that a s.w.l. be absolutely certain of the call of the station he is reporting. VK3QL tells me he receives many QSL cards from overseas stations which it is impossible to clear, so that they are sent back to the sender.

new rig was fired up. 'Tis rumoured that 3ZCO is organising a 8 el. yagi; how about that? New call on 8 mhz, Graham 3ZCA, making quite a noise on the band.

3OF heard operating portable from the wrong side of the hill at Sasarua. Have to borrow a.c. from S.V. tomorrow. 3CU OK. 3UW is putting in some nice sigs into Melbourne, likewise 3CI. Where's George 3ZGU lately? 3ZBC has been trying d.s.b. reduced carrier with "spectacular result". 3ZDO has been down at Mornington, portable, not much signal heard up here. Peter 3AHL continues his good work. a.b. call me. There was a lot of talk on earlier wonder where all the a.b. stations are these days?

SZEO has just entered into a contract for a new \$146, appears the old one will now mount on the shack wall along with other exhibits for the prosecution—or should I say, persecution. Who are the gentlemen who work cross-band duplex for long periods without mentioning call signs?

We know it is not possible for you to be on the air all the time, but surely it is not asking much to say spend at least one hour per week on the band—any band—and let everyone know that there are many Amateurs operating on any one band. 3ZGP.

QUEENSLAND

Dave EZAK is on sideband or double variety at moments. Bill FWD is having a shark-cum-robotic dance party. He has a 30' x 60' x 8' mike cable, Bill, otherwise Dot won't be able to say hi to ANGI! Goe AGG has 6 rxn baw down for maintenance; best leave it down till after cycle season. Believe Lance EZAZ will be QRMing Bob CAG soon. Bob has been J. B. C. C. at 43. He's got a new J. mobile on 43.4c JAWZW, Hilo's sister (18) wants some VK type pen friends. She is a high school student--English OK Address: K. Takahashi, 103 Kanayama, Tokonome City, Aichi Pref., Japan Tami JAIBW got 103 contacts in Ross Hull Contact. Max 4HD gone as has been down for shift to brew QTE--AZRV.

SOUTH AUSTRALIA

Phil ex-SAD is back with us again. Phil, who was active on 2 mx, went to G land for three years where he took but a call and used single sideband to work the boys back here. Hope to see you around Phil. Congrats to George 5ZQA who now has his Morse. We also understand that Neil 5ZDH and Harry 5ZBZ are getting in a lot of practice. —5ZAW.

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worked well into Melbourne with his 144 Mc. portable gear.

The Club spent an interesting evening recently at Dick Hignway's shack and members obtained a preview of t.v. transmitting equipment that Dick is building including a flying spot scanner, also various other pieces of Ham gear. During the evening, contacts on 144 and 288 Mc. were obtained and several prospective Hamsters had their first opportunity to say a few words over the air.

On a recent Tuesday evening Club members 3ABT, 2ALP, 3AMC and 3IC took part with other South Western Zone stations in their first W.I.C.E.N. hook-up. All stations were heard at good strength and traffic was handled without difficulty.

At the March meeting members brought along their v.h.f. gear for display and discussion. Equipment displayed included several crystal locked 144 Mc. converters, 288 Mc. equipment and a coaxial tuning unit for 876 Mc.

Congratulations were extended during the meeting to Harry Michael and Rex Ford, both of whom have just received word that they had passed the exam. for their limited licences. Congratulations also went to Eric Coxall, the chief instructor of the study group for his coaching that enabled these chaps to get their tickets.

The Club plans to hold further tx hunts on 80 and 2 mhz shortly and suggests that members put some work into getting gear ready for the occasion, now. The Club meets weekly on Wednesday evenings at 8 p.m. The club room is in Gheringhap Street at the rear of the Congregational Church. All interested in radio are welcome.

QUEENSLAND

BRISBANE AND DISTRICT

Well, we are now into the new financial year and rules are due again; please send them in quickly to save unnecessary book-keeping.

Officers will be elected at this month's Council meeting and there will be some old members leaving Council as well as new ones taking Council jobs. John AFP has decided to have a rest from Council after having been in different capacities at 5 p.m. The club room is in Gheringhap Street at the rear of the Congregational Church. All interested in radio are welcome.

There is a very important matter which must be cleared up one way or another, and the sooner the better. It appears that some of our members on the extreme fringe are causing t.v. and have to stay off the air during tx hours. Now, if you have any harmonics from your 3.5, 7 or 14 Mc. transmissions that fall on 63 Mc., you will most

OBITUARY

H. W. (BERT) MADDECK, ex-VK3EF

March 18, 1900, saw the passing of an old-timer in Bert Maddeck (aged 69), who obtained his license in 1918 and was one of the first in Australia to own and use a three-electrode valve. He was one of the first six operators to join the Navy far service on merchant ships in World War I.

From 1918 to 1930, under the call of the VK3EF, he was very active, especially on Sundays on the broadcast band playing recorded music. He received some press comments when he put a cocktail before the microphone and cocky disgraced VK3EF by indicating in a letter he was language. It will be news to most young Hamsters to know that the "Listener In" published the Sunday programmes in those days of a few Hams including VK3EF and VK3ED.

Bert home-made gear had the look and appearance of commercial equipment, very different to most Ham gear of those days. About 1934 he sold his 50 watt transmitter to some people in Northam who had obtained a "B" class commercial licence. Later this licence was sold and the station (B's old transmitter) moved to Luback and became 3LK.

During 1935 Bert received mention in the press for having received S.O. London on their broadcast frequency. He came first in the 1935 Trans-Pacific Tests conducted by the Wireless Institute of Australia. This consisted of sending and receiving a message of 500 words across the Pacific. For this he received 1000 shillings.

In later years Bert was employed in the Telephone Branch of the P.M.G., from which he retired some two years ago.

We all regret the passing of one of the old gang and offer our deepest sympathy to his family.

DON FITT, VK3ZBO

In tragic circumstances VK3ZBO, Donald Malcolm Fitt, 56, of Moorak, near Mount Gambier, was accidentally killed on February 25.

Don, only child of Mr. and Mrs. C. J. Pitt, had his heart set on radio from a very early age and when he was only nine years of age he built his first radio set.

When a vacancy occurred on the technical staff of Station 3SE he jumped at the opportunity and was there from 1st April, 1955, until his death.

Although he was not heard on the air, Don showed a keen interest in Amateur Radio and regularly attended the meetings of the Mount Gambier group.

He was one who could turn his hand to almost anything, both electrical and mechanical work, having a fully equipped workshop at his home.

His untimely death came as a great shock and he will be sadly missed by South East Australians.

We join with many others in offering our deepest sympathy to his parents.

certainly cause t.v. if you are in a low signal area. This will be to Channel 2 which covers from 63 to 70 Mc.

Here the interpretation of the Act is very important because there is some doubt as to whether the Act should be interpreted to mean that harmonics should be 50 db down on "your fundamental" or "on the received t.v. signal." Unless there is some clause in the t.v. section of the Act which definitely says in the interpretation, which has been accepted before t.v. reared its ugly head, was that your harmonics should be at least 40 db down on "your fundamental."

Another important matter is, since tv licences must be paid on all t.v. receivers regardless of where they are, what does the service area of the Brisbane tv. stations constitute? If a person with a tv rx in Townsville has to pay his 25 shillings to receive irregular openings of Channel 2, he must be protected from t.v. This is the most ridiculous situation I've ever heard of.

If you are causing t.v. to Channels 7 or 9 you have just "had it" because they have no harmonic relation to the Amateur bands between 3.5 and 30 Mc. and t.v. can only filter out spurious signals. It is pointed in the Act which allows you to have spurious signals, in fact it states quite clearly that your transmissions must be free from them. So if you are causing t.v. you will have to do something about re-building and completely shielding your rig or stay off the air during t.v. hours. When you get breadboard rigs or large unshielded racks are the main offenders and the trend is towards table-top rigs which can be completely enclosed with a low pass filter between the output between rig and antenna.

Council will see if F.E. can get us a clear statement on harmonics because where t.v. signals are below 30 microvolts, the "40 db down" clause would mean that the interfering signal would have to be below the level which could be received on any instrument.

It is impossible for our T.V. Committee to go out to towns in the extreme fringe, but I know they will help you by mail. Tibby 4HR is chairman and if you send your letters to his home QTH I know the Committee will do its best with suggestions which may help. Council authorities on the purchase of six copies of Phil Rand's latest book on t.v. which when received, will be kept in the library and will be loaned out to members having trouble with the "free-say" monster. When we get these books it will be announced in "QTC".

Well, I know you will excuse me for not giving any personal parts because this matter is very important to us. 73 from 4PR.

MARYBOROUGH

After silence for five years, 4GH reappeared on 7 Mc on phone and c.w. Gordon is modulating a single 807 4DJ is now set up on 6 mhz and looking for DX, with an 818 in the final; has a 2 al beam. Both 4DJ and 4GH are building super-regen. receivers for 7x Hants on 14 Mc. Branch cuttings 4BG demolished the 600 ohm beam and used as a beam. Now on using a W.M. folded dipole. 4ELN is now the proud owner of a R30M1 receiver.

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THURSDAY, 25th APRIL, '60

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A meeting of the Wide Bay and Burnett Branch of the W.I.A. was held at a Pensive Spot near Gympie on 28th February to enable XYLs and harmonics to participate. 17 members were present, making 44XHD and 34XHD 45A, 44XHD 4FU and 42XB were admitted as full members, making a total branch membership of 37.

High power transmitters were operated on route by 4B3, 4HZ, 4SW and 4CR. Stan 45A was appointed as delegate to the Div. Council. After the meeting a Tr Hunt was arranged by 4CR who was eventually run to earth on the other side of the Mary River by Max 4HD who won a split-stator tri condenser donated by 4CR. 4B3, 4HZ and 42XB were also present. A hunt was held for the ladies, the winner being Mrs. Gwillim.

A.O.C.P. classes have commenced at Bundaberg, Gympie and Maryborough.

TOWNSVILLE

The monthly meeting of the T.A.R.C. was held at the residence of 4HX on 25th Feb. Owing to the absence of the President (4PB) the chair was taken by 4DD. After disposing of the minutes, the chairman welcomed the visitors—4EH, 4ZBV and 4ZCK—all from Brisbane. First item of general business was the notice of motion by 4RW which appeared in Feb. notes. On moving the motion, 4RW was requested by the chair to curtail his address as it had been referred to at previous meeting and that the members had had a month to think it over. After a short address, 4RW moved that the A.R.C. become affiliated with the W.I.A., which was seconded by 4ZBE.

After a lengthy, and at times heated, discussion, the motion was put. The motion of affiliation with the W.I.A. was carried 10 votes to 4, or by a 2-1 majority of W.I.A. members. So here the matter rests until some time in the future when it may come up again. Graham 4BX gave notice of motion that the word "social" be incorporated and become the Townsville Amateur Radio Social Club, at the March meeting.

It was planned to see quite a number hand in their subscriptions to the W.I.A. to the Secretary 4WH. The Club, I hope, will become an important members of the W.I.A. even though not affiliated.

Bill 4ZBE asked that a meeting night be devoted to talks on v.h.f. and it was decided that one hour be set aside for this purpose. The 4th 4DD, in his technical talk, spoke of the method of obtaining bias voltage at very low cost. Frank 4FB spoke on the classes and mentioned the attending variance between 4 and 10 and that good progress was maintained. Owing to the wet season and flooding, Claude 4UX and his boys did not arrive from Ayr, but promised to make the next meeting, weather permitting.

Owing to my outside commitments, have not persuaded the band to visit and cannot give a resume of what the boys are doing. Arthur 4FE passed along the word that there are four stations on 80 Mc. operating from Darwin. The local 2 boys had a solid day with the KH6s on the Saturday after the bomb exploded in the "Sahara," signals being 59 plus on 40 Mc.

John 2JU's report in March "A.R." on the LTU. conference was very good and merits reading many times and can open up a wealth of interesting and varied material. How we must now prepare for the next LTU. Conference and not leave it to the last few months as he mentioned in the article. This should be a warning which should not contribute to the called filthy lucre being their heads in shame, as after years of enjoyment in Amateur Radio they may find their hands to be well away. United we stand, divided we lose our operating privileges.

SOUTH AUSTRALIA

The monthly general meeting of the Division with the theme to visit VKs was held at the clubrooms to a capacity audience, even though it also included an annual general meeting for good measure. Anybody who belongs to any form of organisation is well aware that annual general meetings are to be avoided if possible, unless of course one has a plentiful supply of deep sleep or the equivalent. It is always surprising just how many members come along to the VKS general meetings even though well aware that it will also include an annual general meeting as well.

The secret lies in making the meeting as much like a civil war as possible, without letting the combatants into the secret. The audience usually divided into two sections, the minority who have come along well aware of what they have let themselves in for, and the majority who have come along blissfully

unaware of the trap that they had fallen for. The minority sink into an unconscious condition very quickly, but the majority take a little longer, possibly from a sense of embarrassment. The moment that they are able to be settled down in the arms of Morpheus, up jumps what is commonly called an agitator and says a few well-chosen words, and before we can say single syllable, another such phrase, the audience is wide awake and arguing the point with whoever is prepared to listen, and some time therefore elapses before they sink back to sleep. This can never end as the members leave the meeting in a state of exhilaration, and all say what a beast, meeting it was. This is a very rare event, as general meetings only come once a year!

Working along these lines, the meeting was a huge success, the more so when you realise that it voted unanimously for an increase in income, an increase in the honorarium for the Secretary and Treasurer, and I feel sure even for an increase in my salary as sub-editor, if it had been left to them, which it was not, due probably to bias on the part of Council. The highlight of the meeting was when Ted 4JE stood up and made an impassioned plea for more use of the radio, so much so that it looked that we would have to shoot him to stop him, only to be trodded by Luke 4W, who said that the first time that a certain local address was on mx a trial he was blasted off the said band by Ted calling CQ on phone! and in the c.w. area at that. Ted was overcome with mortification. Luke was overcome with remorse, the members were overcome with mirth, and the chairman, Brian SCA, was overcome with frustration.

The rest of the night went according to plan without any untoward incident, except when Leith 4LG engaged in a battle with the Elzabeth gang as to whether they should be classed as metropolitan members or not, which was brought to a satisfactory conclusion by Leith giving in gracefully, but only after the hydrant had entered the back of the room and given him a decided dirty look. Leith was not worth a "kiss" after this, and he relapsed into a stony silence for the rest of the meeting, well anyway what can be classed as a stony silence for him.

Heard Joe 4QO on 40 mhz the other Sunday morning and he seemed in his usual good mood. Just in case you never listen in on that band, Joe is a double Grandpappy, with a boy first Joyce and a girl boy second work, Joe; by the way, they tell me that you are being heard loud and clear in the test room of the T.V. radio workshop over the road. Do they QSL?

Tom 5TL heard on 40 and conducting a QSO under some difficulty. It would appear from what I heard of the contact the other side of the road from his shack was adjusting his motor car, and after every adjustment he would knock the car back and then come back for more tuning up. Tom was having some difficulty in judging how long the car would be away, and when he would hear it coming back he would start talking twenty to the dozen, and then fall to the shack floor in sheer exhaustion.

Gordon 4SWI needed some Minites the other Sunday when his rig gave up the ghost in the middle of the W.I.A. session. If my rig or your rig sells out, so what? but when the technical advice and operators how the station goes out of business right in the middle of the session, then the whole world knows about it. John 4JC came up on the frequency and noble carried on the session, to everybody's satisfaction, especially Gordon's.

Tom 8AQ has been heard consistently down here over the past month, both portable and fixed on 40 mhz. Good solid signal on the SWI call-back, too.

Among the visitors at the meeting were: Kevin Swenney, from Gawler; Robert Daniels, from Magill; Ron 4ZBE, and last but not least, J. Armstrong 4GZ, who called in on his way home from visiting his wife in Port Lincoln, who is none other than George SOA, who sent a personal note by his nephew strenuously objecting to his guest house being likened in the notes to the guest house provided over by Doc 4MD. My humblest apologies, and if I have said anything that I should be sorry, for, I am glad!

I was a little early for the meeting so decided to have a look in the shop windows to pass the time away. Sharing the windows with me was a double for Phil 4W who is in G land at the moment, and when this double spoke to me I realised that it wasn't a double, and also that Phil was not in G land at all. Nice to see you back from your wandering OM.

News from the Upper Murray gang is a little improved this month, although my representa-

tive there has been so busy that he has had only a little time for listening, with his only contact on the air for a week severely messed about with the aforementioned motor car.

Harry 8KW announced recently that he would have to get around to getting on the air again. Everybody is busy trying to decide if this is a threat or a promise, and only time has the answer. Fred BMA has apparently succeeded in separating himself from the rotary box because he has been heard on 50 Mc. at odd times with a couple of local contacts.

Hughie 5BC, according to all reports, is not alive on the air as of yore and the reason given is that the famer is so keen on the one-eyed monster that he is not game to go on much in case of family t.v. This excuse might go over with some people, but as far as I am concerned I think he is a victim of the monster himself. How could you, Otto? Pat 5LT turned up at the meeting and tells me that he has not as yet finally decided which part of the suburbs he will be living. He is still at the local caravan park and therefore has no opportunity of getting on his favourite 14 Mc. Rumour has it that he will finally settle on the foothills for his QTH.

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Could not but notice in the President's annual referendum that during the year Comps SEP have been forced by pressure of business to give up the Divisional notes, and that your truly had taken up the job again. His close friends, who are yet to be heard, had not succeeded in having a monthly sparring match with a one-time VKX scribe, which is missed by all, but that felt sure to be a thing that they would be able to pick a fight with another Divisional scribe, cut me to the quick. Me, the most peaceable, the one who always has been the one to get the best of the size right through annual meetings and never opens his mouth, the one who is known far and wide as Oyster, the one who has been in the President's chair, the one who has a new President this year, Lloyd 50K, although now I come to think of it, he gave me the same size at the meeting, and I was barred from the next two annual meetings."

Claude 8CH is at the moment very busy working the DX on 40 mhz with c.w. The week has turned a circle, as it so often does, and Claude is back where he started in Amateur Radio. Good to hear, OM. Incidentally, your brandy may be the best I have ever tasted, but mine is the best in the Commonwealth!!

Tom 5TW is fairly quiet these days, but with his family of girls growing up and the fact that he has a good number of dependents, there is some excuse for him. Stuart 5MS had a good try to cut his foot off recently, but we are glad to report he has not. There is no more. There is no truth in the rumour that he was looking for an excuse to be home when the DX broke through. Erg 8KU brought his car out on the morning of the meeting of the S.E. boys and gave them a few hints on the art of c.w. Did that make Claude get out the key and start "cutting" me? I have been on holidays, but did not spend the entire time in idleness as he returned with a 46 ft. tower. Look out, here we come. Col 8CJ has not got much of a chance of late but still enjoying life to the full in his own inevitable fashion. Possibly the fact that the v.t. set next door has happened to be in QTH is a little bit of a coincidence. I suppose that is the canary" grin that he is wearing lately.

Heard Max 5GF on 7 Mc. the other afternoon and he was in a fair way to get into his him these days, especially on 7 Mc, but back a few years ago his signal was seldom off the air. Tim 7BM was copied recently in QTH and I thought, the contest was a model one. A little theory, a little amateur chatter and also quite a lot of talk of subjects of interest. I was reminded of the definition of "Yabby catchers as against Duck shooters". I was amazed at Jeff's statement that in six months he and the professional shooter, the Kangaroo, had not had a shot. I had misunderstood him, but Tim repeated that figure, so I knew it was right. I can say that I have had many a interest to the number of Kangaroos around in the paddocks. Think of the feed they would eat.

News leaked out this month that Yubby 8AO would probably be moving from his present QTH in Elizabeth to another part of the same area. Contention was expressed by several of our members as to where the new station was to be. East Elizabeth, then North Elizabeth, then West Elizabeth, and finally South Elizabeth. Everybody is waiting with bated breath for the contest, and the guns in the unfortunate area to be chosen are at the ready.

Ted 8AO will be away SAC at the meeting and he looks fit and well after his return from the trip abroad. Would have liked to have a longer talk, but naturally he was in a hurry. Jack 5OM heard on 40 with an extra good signal. He seemed to be a little doubtful as to whether his signal was as good as he said it, but I can assure him that he had nothing to worry about. In fact I and several others that heard his transmission commented on the quality of it. I was not heard to be active on the air, although he is said to be decidedly active with 50 cycles instead of 7 Mc. It can't tell for me. George 5EC but a little birdie tells me that his second in command, Jim 5W, is about to take unto himself with a new rig. I hope he does not forget that immortal phrase, "DX before dishes."

Working along the same lines I want to take the opportunity of warning everybody to stay out of the district. I have been a little bit true as first. First it was John 5JC and now it is Bob 8PU who is the father of a bonny bunch of children. I have heard that you, you, Bob, and I take off my hat to the XVI, and but for the fact that I might become infected I would like nothing better than to come and see the little ones. I have heard that's enough jeers and boos from you mob, I could become infected if I went into the district, there always has to be a first time!

Joe 5JB bowed up at the SWI call-back the other Sunday morning. He has not been heard lately, and I was beginning to think that he had given the game away. That makes two of them up at Leigh Creek; I might get my wind up yet.

Layton, the son of Lance 5XL, is a cadet at the Weapons Research Establishment at Salisbury and is about to be awarded the grand old game of Amateur Radio, so much so that he is thinking of having a go at the ticket in the future. Another promising recruit to the ranks of the 52's is a young man, a veterinary science scholarship and is at the University to continue his studies. In residence at Lincoln College, I would be surprised to see him at a meeting or two, and the same goes for Layton.

"Anybody who was at the last general meeting could not have failed to notice how unanimous the vote was to raise the subscriptions for this year. Bearing that in mind, I was somewhat surprised to bump late one or two of the members at the meeting, and to find that they felt that the rise was not altogether justified. In talking the matter over with them, I realised that all of them did not realise just how expenses have risen lately, and also that they did not have the benefit of the thorough explanation given by the Treasurer 5ZCL at the meeting. I feel that it would be a good idea to put the matter of the subscriptions had been included in our Journal which came out just after the meeting together with the explanation of the Treasurer, and any other points which made the members present at the meeting so unanimous. The strongest point of all is that we were paying thirty bob, year when our wages were less than half of what they are today, and a rise of ten bob therefore does not seem so big from that angle. Don't get me wrong, nobody was actually grizzling, but a number just did not have a full grasp of the reasons.

In closing the notes this month, I cannot miss the chance of saying that one of the greatest "Gimmicks" in commercial radio, to find out the main purpose of the contest, is to make an obvious mistake in the copy, or purposely leave something out, and then wait for the telephone to ring and the letters to come. Recently we saw in the local paper which runs our W.I.A. weekly column (I heard you, it's weekly, not weekly!) and to say that the reaction was good is to put it mildly. To all those who are going to be "waking the old fellow up," or to find out what had happened to "the grey haired old so-and-so" to tell him where his old home is, and to the address of the old folks' home, and finally to all who expressed concern as to my physical health, my alleged senile decay, and my other ailments, I say to you, thank you. I can only say sweetly, with a smile that would do justice to a ravenous wolf, thank you for your concern. I hope you know that you think of me now and again—GERTHA.

TASMANIA

My apologies to Col 7LZ for crediting his 285 megacycle distance record to Barry 7EZA in the March issue. Anyway, Col, a mighty fine claim the record belongs to. I know that I have a number of questions on the National Field Day Contest, and altogether, that Contest was well patronised this year and was certainly a considerable improvement on the previous year. I am sure that it was also pleasing to find Tom 7FM and Max 7MX giving scores on c.w.

Peter 7FD is moving to VK4 and we all wish him the best for his retirement in a warmer climate. We hope to hear you on there, Peter.

Tom 7FA will be completing his term as broadcast officer for our Sunday morning sessions from the middle of March. The Institute is deeply indebted to Tom for devoting so much time to regularising our service and we all thank you most warmly Tom for your efforts on our behalf. It now behoves you, OM, to build yourself a rig and become airborne.

Ken 7KA is quite confident that he has his mind of w.e.t. troubles, at least his own hi-fi set in it. I am sure that he is a member of 7KA in the wrong spots, and that is the basis of his quiet confidence.

Paul 7BA is probably in Amateur activity in the South since about the end of February. He can be heard most nights pounding away.

We in the South were most fortunate at our March meeting to have a peep at the test equipment installed at the place of business of Ted 7LZ for the purpose of testing T.V. ra's.

The monoscope is really a fabulous contrivance, and if we did not know it before, we came away with the realisation that the alignment of a homebrew T.V. rx is far beyond the w.e.s.s.i.s methods we would have to employ without the use of such contrivances.

North Dakota is a stumbling block to several of us for W.A.S. I was anxious to hear a station from that State on 80 metres coming through 5B on the night of 23 March. There is more, there were a number of W.A.S. coming through at that strength the same night.

Four of our chaps from the South deserve our gratitude for operating the radio over two mornings at the Hobart Regatta in early February.

DX has been pretty recently, but I did hear OR4TX on 21 Mc, on 21st Feb, and Doug TDW reports that the 2Z's and a 2E8 were coming through 5B on the same band on 28th Feb. I also heard on several occasions both morning and night 7G7KX on 14 Mc.

The V.h.f. Contest for VK7 stations was duly held in February. New stations were encouraged on to those bands for the Contest, but I did hear a whisper that an additional station will be ready by the contest time next year.

It was good to hear Den YDK back on the air, this time from his new QTH at Postina. He has a new 80w. rig working and hopes soon to be heard on 40 mhz. I was glad to hear that Doug 7AZ recently decided to shorten a couple of fingers on his left hand, using a good reason to do so. Doug hopes to be active again later this year.

HAMADS

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